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The Bristol Medico-Chirurgical Journal

"Scire est nescire, nisi id me
Scire alius sciret."

AUTUMN, 1927.

THE LONG FOX MEMORIAL LECTURE:

DELIVERED IN THE UNIVERSITY OF BRISTOL AT THE MEETING OF THE MEDICO-CHIRURGICAL SOCIETY ON NOVEMBER 30TH, 1926.

THOMAS LOVEDAY, M.A., *Vice-Chancellor of the University of Bristol, in the Chair.*

BY

GEORGE A. BUCKMASTER, M.A., M.D. Oxon.
Henry Overton Wills Professor of Physiology in the University of Bristol.

ON

SOME CONSIDERATIONS ON THE CELLS AND LIQUIDS OF THE BODY AND THE OXYGEN-CONTENT OF THESE.

WE have met this evening in all friendliness of thought to carry out the wishes of those who founded a lecture to perpetuate, in this City of Bristol, where he was born and lived, the memory of Edward Long Fox. If the profession of medicine is an exacting one, if

those who follow this are compelled, as is the case, to remain students all their lives and reflect upon and regret the narrow limitations of their knowledge, we still possess some compensations. I can think of few which are more sufficing than for a man to have lived through a long life of ceaseless activity and so endeared himself to others, that, year by year, we are enabled to call to memory, if only for an hour, the work and personality of Long Fox.

I must thank those who have invited me to give this memorial lecture. The date of the first is 1904, and this will be the fifteenth occasion on which it has been delivered. Many years ago I had the pleasure of meeting him, was familiar with his writings, and in particular can call to mind his papers on the sympathetic nervous system. It is not necessary here to dwell upon his contributions to medicine, but the singleness of purpose with which he followed his profession is well known to some in this room, and for us all it remains a pleasant memory.

As one of his colleagues has remarked: "He bore ill-will to no one, and was ever ready to show acts of kindness to others, even to those who scarcely deserved it." Is not this almost as great a tribute as it is possible for one man to pay another? Do we not learn how each one of us in different degrees profoundly affects the lives of others? I have ventured to abstract a portion of his address given when President of the British Medical Association which met in Bristol in 1894. From this, better than from any remarks of my own, it will be possible to understand why Long Fox held the position which was conceded to him both as a man and a physician by his fellows.

"As a profession," he said, "we are above party, our highest aspirations tend to the formation of a pure commonwealth. The poor, the sick, the criminal are our daily study, primarily for the relief of the individual. But we have nobler and further reaching aims; that poverty may be mitigated by more healthy surroundings, that sickness may be diminished by the education of the nation in the simple laws of health and in the distribution of knowledge, so that habits of temperance in all things may be increased and by a knowledge from an early age of the common facts of physiology, so that victims of a debased heredity may diminish in our land. Poverty, disease and crime collectively or separately are the subjects of our investigation as a profession, and it should be our aim to remove these."

I propose in this lecture, with your permission, to depart somewhat from the immediate subject-matter of this address, since without extended laboratory experience—I mean complete familiarity with the use of instruments for research—my own special work, which I was given to understand might be of interest to others, is difficult to convey in words without digressions which it would be unwise to pursue.

Years ago, indeed in 1906, when some work on the coagulation-time of normal and pathological blood was undertaken, I devised a method for the study of the coagulation process by using films of blood, which, when held vertically in platinum rings allowed the corpuscles to subside under the influence of gravity and left the plasma free to coagulate at the temperature of the body without any contact beyond the immediate edge of the ring. It was soon noticed that the rate of subsidence was inconstant, indeed showed marked

variations. At that time, although I was aware how much attention this phenomenon had received from physicians in the last two or three hundred years, the observation did not arouse my interest or particularly occupy my attention. But the whole question of the suspension stability of the blood has been recently studied by Robin Fåhræus of Stockholm, whose papers, published in 1921, occupy about one-third of Volume LV. of the *Acta Medica Scandinavica*. To an audience which includes many who are actively engaged in medicine, I have thought that a short account of the methods and results of his work might be of interest, since little or none of this is to be found in the manuals or text-books of physiology.

During the years of the war the undoubted value of blood transfusion became of outstanding interest in treatment for hemorrhage. The demonstration by Janski in 1907, together with the work of Moss in America, acquired a direct practical interest, since the frequent dangers, and even fatal consequences, of blood transfusion were for the first time proved to lie in the agglutination or clustering together of red corpuscles and subsequent hæmolysis which occurred in the blood corpuscles of the patient owing to peculiar features in the blood plasma of the donor. Who, by any effort of reason or by any other method than an experimental one, could have discovered that human beings fall into at least four blood groups? If you will excuse a personal detail I myself am in Group II. These are capable of recognition by no physical or chemical reactions, but only by experiments which are of the nature of biological tests, for strangely enough there are processes in the living body which alone are significant of the presence of agents, the nature and identity of which we

are absolutely ignorant. No enzyme, no agglutinin, no hæmolysin has ever yet been seen. It is only by their effects that the existence of these may be affirmed. There is indeed a world of phenomena in physiology as in physics which is beyond our actual recognition in so far as this is dependent on our senses.

Not less interesting is the more recent knowledge which has been gained on the suspension stability of the blood. The treatment of disease even from the earliest times has been related to general pathological ideas. Such views as were held dominated treatment then, just as at the present day. Rational medicine must always be linked up with physiological and pathological knowledge. The two sciences are identical and pursued by identical methods. It is no more possible to have one science for normal and another for abnormal processes of an organism, than it is to divide the study of meteorology into one science for good weather, another for bad weather. All those whose lives are largely passed in laboratory work, whether as chemists, physicists or physiologists, are unwilling to be influenced by opinions, views or ideas, no matter how speciously these are advanced, unless such views are the direct inferences from experiments.

Moreover, the way in which any science grows and develops must always possess an interest, and particularly for those who have to learn how slowly the growth of knowledge may take place. It is well known that from the time of Hippocrates to the middle of the last century both the treatment of disease and the current pathology on which this treatment were based rested to a large extent on the phenomena presented when blood was withdrawn

from a patient as a diagnostic or therapeutic measure. Apart from the fact that it clotted, and the rate at which this occurred, the production of a buffy coat was observed in many diseases. This might form a third or more of the clot and appeared to be a dirty white substance, variable in amount, which formed a superficial layer above the rest of the coagulated mass which had clotted like normal blood. This phenomenon dominated the pathology of the day. It is an open question whether, apart from the facts established by Harvey of the circulation of the blood, anything in medical knowledge equalled the importance assigned to the formation of a buffy coat or *crusta sanguinis*. The blood was regarded by all physicians, even as late as Sydenham, to be the seat of an inflammatory process.

Though it was probably little more than a fortunate guess, Theophrastus von Hohenheim, known to his contemporaries as Paracelsus and regarded even from their point of view as medically uneducated—such opinions one may believe are not confined to any particular century—possessed a peculiar kind of intuition which caused him to interpret phenomena in such a way that we must realise he was hundreds of years ahead of his time, for Paracelsus (1538) considered abnormal features of the blood as the result and not the cause of disease. Paracelsus, as you may remember, has been spoken of as divine by Anatole France. Erasmus consulted him for stone. He was the subject of a dramatic poem by Browning. About a hundred years later William Hewson introduced the idea that blood in disease might thicken like size in water. "Sizy blood" became a familiar term in medical literature, as may be seen in the works of John Hunter and Scudamore. It was recognised that sizy blood

clotted slowly; blood was therefore drawn as a diagnostic method, and even so late as 1843 Wharton Jones pointed out that it was not necessary to bleed a patient to distinguish between healthy and buffy blood, but that a single drop pressed gently between two glass plates and allowed to settle sufficed to detect the difference. What is the explanation that the whole subject of the buffy coat is to-day little more than a historical curiosity? The reasons for this are partly general, partly special. The middle of the last century was a period of thorough and radical reform both in physiology and pathology, and therefore in the science of medicine. The cellular pathology created by Virchow and his contemporaries brought about in the course of a few decades a complete change in our comprehension of disease. We no longer spoke of inflammation of the blood, nor did we regard it, as for example did John Hunter, as possessed of special vital powers.

When it became obvious that life was bound up with the elementary units of the organism, that is, with the cells of which the body is constructed, even as a cathedral, no matter how magnificent it may be, or what lure it has for lovers of architecture, is built up of separate stones, it followed as a natural consequence that the ultimate causes both of the normal and abnormal performances of the body must be sought for in the cell-changes of the organism. The physiological and pathological importance given to the blood was now transferred to the great cell complexes, in fact to the organs of the body. The reaction against the theories bound up with humoral pathology which had existed for some 2,500 years was so violent that even the facts on which it was founded were attacked. But the facts were correct,

it was not the observations which were at fault but the deductions drawn from them. It may be doubted whether Sydenham or Radcliffe, or Trousseau or Graves, to mention a few who have followed the science and practice of medicine, were not the equals of any later clinical physicians.

The remarkable phenomenon of the buffy coat and the changes in its aspect were after a short time forgotten, owing to the almost complete disappearance of blood-letting as a therapeutic measure, and it is chiefly due to the researches of Fåhræus that a renewed interest has been awakened in the question of how a buffy coat arises in shed blood, for this, as we shall see, is due to an abnormal suspension stability of the blood.

Blood, as is well known, is so constituted that physically it is a coarse reversible suspension of corpuscles in plasma. When the suspended bodies have a higher specific gravity than the suspension medium, these will fall with a velocity which can be calculated when the suspension remains undisturbed, as was shown by Stokes in 1850. For example, small gold particles 1 μ radius will fall 2·4 mm. per minute, that is, the suspension will clear to the extent of 14 cm. in one hour, but with particles which are only one-hundredth the size these will subside only 10 mm. in a month.

In the method employed by Fåhræus blood was citrated and allowed to stand in tubes 17 cm. in length and 9 mm. wide. Great variations were observed in subsiding speed. At first this is slow, but acquires a steady definite rate in about twenty minutes. Obviously the better the stability the slower the rate of settling, and as a measure of this Fåhræus observes the length in millimetres of the layer which is clear of

corpuscles at the end of one hour. The value of this indicates the suspension stability, and the higher the values the less is the stability of the blood suspension. The suspension stability is inversely proportional to the sinking rate.

The stability reaction has been investigated in about 400 cases of different physiological conditions with the following results. The higher values indicate diminished stability. The following are average results in physiological conditions:—

7	children (the blood was obtained from the umbilical cord at birth)	0·5	mm. per hour.
84	men	3·3	„ „
61	women	7·4	„ „
48	(parturient, pregnant) women	44·9	„ „

From these figures it may be concluded that human beings can be classified into groups which are regulated by age, sex and physiological conditions. The conditions in pregnancy are such that the speed of sedimentation rapidly increases month by month.

Suspension Stability in mm.	Month of Gestation.
6	1
17·4	2
23·8	3
20·7	4
29·2	5
33·3	6
40·7	7
47	8

Individual variations of course exist, but evidently the well-known fact that in pregnancy the blood is profoundly changed remains confirmed. Further, the reduced suspension stability attains its maximum at the close of pregnancy and remains for at least two months of the puerperium at an average of 41 mm. for the first and 19·5 mm. per hour for the second month.

Fåhræus regards rates greater than 9 mm. for men and 12 mm. for women as pathological, and his extended researches, which have been to a considerable extent confirmed by Linzenmeyer and other observers, also show without exception that the suspension stability of the blood is reduced in almost all diseases, and this reduction is considerable. Time allows only a few additional details to be mentioned. The number of cases investigated is shown in brackets after the name of the disease.

INFECTIOUS DISEASES.

Septicæmia (2 cases): 95 mm., 105 mm. per hour.

Typhoid fever: second week, 23 mm. per hour.
fourth week, 49 mm. per hour.
eighth week, 75 mm. per hour.

Pulmonary tuberculosis (3 cases): 40, 60, 85 mm. per hour.

Croupous pneumonia (4 cases): 50, 53, 68, 80 mm. per hour.

Evidently from these experiences of the stability reaction the reduction is almost pathognomonic. Westergren, among others, has employed the methods suggested by Fåhræus and confirmed in a comprehensive research that not only is the sinking velocity abnormally

high in pulmonary tuberculosis, but that the extent of this change in the blood runs parallel to the degree of severity of the disease. After injections of tuberculin the sinking velocity also rises definitely after each injection. After uncomplicated fractures or simple operations the suspension stability shows diminished values of 22 mm., 25 mm. and 29 mm. per hour.

When the cause of variations in the speed of sedimentation was investigated, Fåhræus, as the result of careful experiments, came to the conclusion that changes in the viscosity of the plasma, of the sizes of corpuscles, of the specific gravity of the liquids were practically negligible in the process of sedimentation. The phenomenon is due to agglutination of corpuscles. It is known that red corpuscles easily run together into the well-known rouleaux formation or agglutinate into masses. Both these states can easily be augmented or diminished. Simple laboratory experiments conclusively prove this fact, and in disease exactly similar states may occur.

It is possible to calculate that while a single red corpuscle or red disc will fall through a large volume of plasma at a rate of 0·2 mm. in an hour, in the blood, where the volume of corpuscles to plasma is as 1 : 1·4, sedimentation would take place at about one-tenth of this rate. With a sedimentation rate of 1 mm. an agglutinated clump of eleven corpuscles will fall with a velocity of 1 mm. per hour, and a clump of 58,000 at a rate which gives a suspension stability of 75 mm. and a sinking velocity of 300 mm. per hour.

Fåhræus is of opinion that the cause or causes of agglutination are not due to any specific substance in blood plasma. It is possible or even probable that

specific agglutinins exist in pathological states, but in normal individuals the agglutination process is identical with the rouleaux formation of red corpuscles and is indeed only an exaggeration of this phenomenon which is one that always occurs in shed blood.

The degree to which this takes place is chiefly dependent upon the properties of the plasma. Of the constituents the colloidal complexes are the most potent, the proteins fibrinogen and globulin; of these the former, though existing in human blood to only the extent of 0·56 per cent., is particularly efficient as an agglutinating agent. This is shown by the fact that the suspension stability of defibrinated blood is much greater than blood which has been hindered from coagulating by treatment with sodium citrate. That the speed of sedimentation is determined by some constituent protein in plasma, and not by any features of the suspended corpuscles, may be inferred from experiments where the addition of an emulsive colloid such as gelatin to blood accelerates the sinking rate, whereas if plasma be diluted with a solution of inorganic salts, as when Ringer's fluid is added, the rate of subsiding is reduced and the suspension stability augmented.

Some experiments made by Fåhræus, in which the corpuscles and citrated plasma of two blood tests which showed considerable differences in stability were simply exchanged, possess considerable interest.

EXPERIMENT I.

Suspension Medium.	Rate of Sedimentation. Male Corpuscles.	Corpuscles of Pregnancy
Plasma (male) ..	4	10
Plasma (pregnancy)	55	62

EXPERIMENT II.

Suspension Medium.	Rate of Sedimentation. Male Corpuscles.	Corpuscles of Pregnancy.
Plasma (male) ..	8	9
Plasma (pregnancy)	54	67

EXPERIMENT III.

Plasma (male) ..	16	21
Plasma (pregnancy)	45	50

From these figures the conclusion may be drawn that the different degrees of agglutination of the red corpuscles and the variations in sinking speeds are chiefly, if not entirely, dependent on the properties of the plasma and but to a small extent on the properties of the corpuscles.

It is clear that changes in the suspension stability of the blood must be accepted as an important physiological and pathological fact. Is it justifiable to apply the information gained by laboratory experiments when the flow of blood within the vessels of living animals is considered ? This subject, in view of the frequent occurrence of post-operative thrombosis, well deserves extended research, and moreover the subject gains in interest should it be found that we are able to influence this stability during life. This reduced suspension stability is almost certainly associated with an increased tendency to coagulate.

It is known from Lombard's original observations some years ago that the cutaneous capillaries can be microscopically studied in reflected light. When the capillary flow of a healthy man or woman is contrasted with that of a pregnant woman a marked difference may be observed. A still more striking contrast may be seen in the blood flow of a pneumonic patient. The

minute blood stream appears coarser, more granulated, the granules are not equally distributed and sometimes the stream appears as if fractured in pieces. This appearance is produced by the corpuscles being agglutinated in the streaming blood. This liquid possesses, in fact, during life a diminished suspension stability.

The appearance of hemagglutination in living blood has also been studied by Ploman at the suggestion of Fåhræus. Here the streaming of blood in the retinal vessels was observed with the ophthalmoscope. It is only possible here to remark that under certain conditions of experimental pressure on the eyeball Ploman succeeded in comparing the stability reaction with the ophthalmoscopic picture, where countless transitions varying from a finely-granulated sandiness in the retinal vessels to a complete resolution of the blood column could be observed. It may therefore be considered as certain that the reduced suspension stability of the blood may be demonstrated during life, and that this is evidenced by increased agglutination of the red corpuscles.

When we reflect upon the unexpected dangers which may be associated with or dependent upon an augmented rate of sedimentation in consequence of stagnation of the blood or of thrombosis within the blood vessels, we realise that such studies as these by Fåhræus, even if a completely final answer is not given to the problem, are of significant interest. Thrombosis in pregnant women, in influenza, in pneumonia, and in states which may occur after operations is by no means uncommon. Death may occur almost instantaneously, or within a few minutes without warning. Research which has for its object a direct application to medicine is among the most fascinating of pursuits. May it not

also be regarded as well worth the time and labour which must be freely given.

With your permission I would like in the briefest possible way to refer to some work which is still in progress in this physiological laboratory, the equipment of which in apparatus and material is second to none in this country. Cynics have spoken of the present time as one of large laboratories and small men, when contrasted with the small inadequate rooms in which such men as Pasteur, Claude Bernard and Paul Ehrlich carried out their early work—the age of great men and small laboratories. As one of the Henry Overton Wills professors, may I here simply acknowledge a debt due for all time to him and also to his sons — individually and collectively — *benefactores nostri.*

Since the discovery of oxygen by Priestley in 1774, the nature of the process of combustion by Lavoisier, in other words oxidations in the inorganic and organic world, and the subsequent introduction by John Dalton, who through a long life earned his bread by teaching at half a crown an hour, of Lavoisier's idea of weight into chemical science, the progress of physiology has been closely dependent upon advances in chemical and physical sciences, and this view includes pathology, though in this subject, for special reasons, the study of parasitic protozoa and protophyta has acquired exceptional prominence.

The processes of life in all living things are dependent upon a continuous supply of oxygen. Man cannot store this in his body. He possesses a store just sufficient to last for four minutes. This would appear a somewhat alarming state of things when we realise that chemical energy is the source of all those transformations of energy which are capable of being

effected by living things, and which exhibitions of energy are indeed the outward and visible signs of life.

Any researches which are concerned with the behaviour of oxygen therefore attempt an intimate study of the fundamental physico-chemical nature of oxidation processes as these are manifested during life. Regarding the respiration of pure oxygen, we may remember that some thirty years ago Rudyard Kipling, when seriously ill, respired this gas for many days, and here I would wish to recall the original observation of Priestley, for he had the curiosity to breathe the gas himself, which he had discovered ;

" The feeling of it to my lungs was not sensibly different from that of common air ; but I felt that my breast felt peculiarly light and easy for some time afterwards. Who can tell but that in time this pure gas may become a fashionable article in luxury ? Hitherto only two mice and myself have had the privilege of breathing it. . . . But, perhaps we might infer that though pure air might be very useful as a *medicine* it might not be so proper for us in the usual state of the body, for, as a candle burns out much faster in pure than in common air, so we might *live out too fast.* A moralist, at least, may say, that the air which nature has provided for us is as good as we deserve."

The gases of the atmosphere are, as is well known, found in the cells and liquids of the animal body. Though the presence of gases in the blood was first shown by Boyle in 1636, even as late as 1830 their existence in this liquid was denied, even by so distinguished a physiologist as Johannes Müller. Davy, some of whose researches were carried out in the Hotwells district of Bristol, had, however, pumped

out the gases of blood. Not to physiologists, but to physicists, are we indebted for a complete demonstration of the quantity and nature of the blood gases. In 1837 this was first given by Wilhelm Magnus, of Berlin, repeated by Lothar Meyer, and, with the device of a special vacuum pump, the first physiological blood gas pump was introduced into experimental work. This was, as indeed were most of the succeeding forms of apparatus, difficult to work, and unavoidable errors had to be discounted, and in particular the values obtained required considerable adjustment. Most, if not all, of the pumps allowed a leak of air. J. A. Gardner and myself, when investigating the distribution of anæsthetic vapours in the body, had to carry out a long series of duplicate gas analyses, and devised a form of tapless leak-free pump which has been used during the last twenty years. It is because of familiarity with its working and the belief in its accuracy that I venture briefly to state a few of the results of experiments made in this laboratory. Dr. Hickman and myself have carried these out, more than a hundred in number.

The condition of oxygen in the blood is well understood at the present time. Its quantity, its pressure, the physico-chemical relations of the gas and liquid are firmly established among a somewhat conflicting mass of physiological work. But the condition of oxygen in liquids of the body other than the blood or of the living cells themselves is not so definitely known. For the latter our knowledge is practically confined to one cell-mass of the body, to the voluntary muscles. From these or from the liquids bathing the cells only carbon dioxide can be obtained. When we think of living cells, it becomes evident that it is not the mass of the solid substances in these which is the important thing, but the whole

colloid complex which can only exist with water. In the case of nerve cells, 9,000,000,000 of which are considered to form the cerebral cortex, there is only 14·18 per cent. of solids, the rest is water holding among countless other molecules, molecules of gas. What is the quantity and tension of the gases held by cells? An answer to this question cannot be given with any degree of scientific accuracy. But it is a question that must be faced. According to some observers, in the cells of the salivary gland the pressure of oxygen is comparatively high, in the muscles it is low. In all living cells the oxygen pressure is clearly the limiting factor for the oxidation-processes, but, as August Krogh has indicated, a great deal of exceptionally difficult work will have to be done before we can say anything quantitatively about the relation between oxygen tension and the rate of oxidations in the warm-blooded organism.

Reflecting on this question, it seemed to us that those liquids of the body which are in contact with living cells might conceivably be in such an equilibrium, that indirectly some information might be gained, if experiments were carried out on the gas-pressures of those liquids. We have therefore examined those liquids which are formed by the liver and kidneys and which are stored in contact with a many-layered cell-mass lining the hollow reservoirs in which these liquids are stored.

Without coming in contact with the air, large quantities, 174 c.c., of these liquids which were warm and fresh were introduced into a tapless blood pump, which was of high efficiency, the last traces of air being removed with cocoa-nut charcoal kept at a low temperature. The results of some experiments are indicated in the following series :—

		Total gas evolved	c.c. of gas in 100 c.c. N.T.P.		
Bile.	c.c.	in c.c.	CO_2	O_2	N_2
	85·00	12·85	12·67	0·22	1·00
	78·50	22·73	24·91	0·89	1·95
	174·08	20·43	9·72	0·59	0·64
	174·08	22·93	10·94	0·09	1·10
	174·08	24·08	11·21	0·19	1·03
Urine.					
	174·08	13·93	6·44	0·24	0·90
	174·08	14·35	6·08	0·29	0·84
	174·08	17·25	7·63	0·28	1·42
	174·08	29·40	13·96	0·25	1·52
	103·15	5·70	3·77	0·63	0·84
	174·08	12·95	5·12	0·33	1·52
	174·08	10·95	4·28	0·46	1·13
	174·08	12·70	5·39	0·23	1·03
	109·00	6·45	4·17	0·39	1·04
	93·00	5·55	4·26	0·28	1·26

Earlier observers have also recorded a few values for the oxygen-pressure of milk and saliva. Since no liquid of the body, except blood, can hold oxygen gas in any form but that of simple solution, it is easy from known co-efficients of solubility to estimate the tension of this gas. The quantity found by Pflüger was 0·66 per cent. of oxygen in saliva, and this would correspond with an oxygen pressure of over 200 mm. of mercury. Our own figures we consider give an average value of 0·33 per cent., and this would indicate an oxygen pressure which is more than 100 mm. of mercury. It is conceivable that the oxygen pressure within the cells lining the bladder is in equilibrium with that of the liquids, and should this ultimately be found to be the case, then a minute amount of oxygen within the living cells might in virtue of its high

potential be capable of bringing about, at the temperature of the body, that mysterious process of oxidation which is the characteristic feature of cell activity.

Michael Foster, to whom English physiology owes so much, and of whose almost boyish spirits I have so clear a memory, has written at length on what is to-day a physiological myth — the existence of an intra-molecular store of oxygen. Although this view is no longer supported by experimental work, his concluding words must and will do well, better than anything I can pretend to say, to show how little is known, how much to know:

"We cannot as yet trace out the steps taken by the oxygen from the moment it slips into its intra-molecular position to the moment when it issues united with carbon as carbonic acid. The whole mystery of life lies hidden in the story of that progress, and for the present we must be content with simply knowing the beginning and the end."

A VISIT TO THE NEAR EAST.

BY

GEORGE PARKER, M.D. Cantab.,
Consulting Physician, Bristol General Hospital.

I HAVE been asked to put down a few notes on my experiences in Palestine, whilst I was in medical charge of Sir Flinders Petrie's expedition south of Gaza for part of the season, and afterwards on a short holiday tour around some of the historic shrines.

There are at least three routes to Palestine: (1) the long sea passage by Gibraltar to Port Said and then by rail to Gaza and Jerusalem; (2) the overland route by Marseilles or Brindisi and then by boat to Port Said; (3) by Marseilles, but then taking a northern course by Athens, Smyrna, Cyprus to Beirut or Jaffa. This route gives one the charming scenery of the Greek Islands, Asia Minor and Syria. Some ships go alternately by routes (2) and (3). I met a man, indeed, who was trying a fourth way by the Turkish Railway through Asia Minor, and then from Constantinople by the Orient Express, which is practically overland all the way.

Cairo, where I had arranged to meet my party, is not only rich in ancient mosques, churches and bazaars, but it has also very fine modern streets and suburbs. Outside the town one sees the pyramids of Gizeh, and the Nile flowing through fields of sugar cane, cotton and maize, everywhere surrounded by limitless desert. Inside the streets one is struck with the brilliant colours

of the men's dress. Here at last the sex is set free to adorn itself as other male animals do. A few men wear European clothes, capped by rich red tarbooshes, but the majority dress in bright blue, pink, or black gowns with an under-robe of yellow, white or striped silk, and above all this a turban of varied hues. In the museum one saw the really gorgeous relics of Tutankhamen's tomb, the jewels and carved work and golden busts. I was taken over the Kalaoun Hospital and then the El Azhar University, shown their treasures and MSS., and entertained most courteously by the Director, with sweet Persian tea, in his private divan.

The Palestine railroad landed me at 4 a.m. one December morning alone at Gaza, and I soon found myself riding a donkey, under the bright starlight, into the town, where our party was staying in an old Turkish mansion, used as a Government rest-house. While the mud huts were being built for our camp at Tell Gemmi in the desert, we filled up the time by unearthing some of the ancient Philistine walls of the town, possibly those which surrounded it when Samson carried off the gates, and in searching for the mound which Alexander the Great threw up in his siege of the city.

Gaza, among its gardens and cactus hedges, is still largely in ruins from Turkish destruction for materials, and from British shell fire. Our advance from Egypt to Jerusalem cost us 10,000 lives, and outside the town is a huge, well-kept British cemetery. The chief mosque, which is being beautifully restored, was used by the Turks to store their ammunition in during the war, till a British shell exploded it with sad results. It was once a fine Crusaders' church, built on the site of the ancient pagan temple. Though no longer a great centre of trade, the quaint little bazaars are thronged with purchasers. The streets are noisy, not only from the

cries of the dealers, and from the camels and donkeys, but also from the many motor-cars sounding their horns, while above it all, especially at night, is the chant of the muezzin intoning the call to prayer.

The British Government is much in evidence. One sees a health office and dispensary, two good but small hospitals, one of them the property of the C.M.S., post and telephone offices, police headquarters, a town council house, primary and secondary schools, and a law court where the Chief Justice, Sir Thomas Haycraft, came to hold the assizes just as we were leaving. Everything has to be done economically in this poor country, wasted by war and previous neglect. However, the administration has succeeded wonderfully without any help from the British exchequer, and the country pays its way.

Blue books show that the British officials in Palestine only number 341, including railway and police officers. The Government has organised a legal code and an efficient judicial system. It is building up a register of all land titles. It has registered and given protection to all ancient buildings, *i.e.* all erected before 1700 A.D. It has created a fine police force of 1,100 men with British officers. It has taken over the railroads, brought them up to date, and put in order 600 miles of public roads, over which the native has promptly set up cheap motor services. The Education Department has already 314 government schools and 400 private ones with an attendance roll of 70,000, besides organising two training colleges and a higher examination of matriculation standard. The Health Department, with aid from the Rockefeller and Rothschild funds, is rapidly wiping out the great scourges of the country, malaria, rabies and trachoma. It provides trained nurses and midwives, licenses qualified doctors and dentists, and maintains bacteriological laboratories. Palestine is nearly the size of Wales or Belgium, but it has only 800,000[1] people, and barely a quarter of the cultivable land is regularly tilled. Almost every tree was cut down during the war, though some six millions of timber and fruit trees have been planted since.

[1] The population of 800,000 contains some 600,000 Moslems, 110,000 Jews and 75,000 Christians.

The country already grows 1,800 tons of tobacco a year, and exports oranges to the amount of £325,000 and wine to a total of £125,000. The Government, indeed, had to advance half a million of money to the war-stricken farmers, the greater part of which was promptly repaid. The revenue shows a small excess over expenditure, but it has been necessary to postpone any great irrigation or harbour works, much as they are needed. When the Jordan electric power works are completed, there will be a supply of 300,000 horse power available; meanwhile temporary electric power and lighting stations have been formed at Jerusalem, Haifa, Jaffa and Tiberias. The potash contents of the Dead Sea water, 1,089 grains to the gallon, are likely to be utilised commercially before long, but minerals generally are deficient. Native agriculture and the cattle are wretched, apart from the 100 Zionist villages. The Jewish immigration, by the way, seems to be slackening, and the popular feeling against it to be subsiding. However, the Zionist movement has been a great benefit. They have expended some six millions of money in the country, started manufactures, reclaimed a large area of land, and by their example stimulated the industry of the natives. The British garrison is reduced to one company of armoured cars, one squadron of aeroplanes, and 450 British gendarmes.

Tell Gemmi lies nine miles south of Gaza, and is a grim mound in the rolling sandy plains. One side of it is a perpendicular cliff rising out of a huge dry wady, 250 feet broad and 30 to 50 feet deep. From the top we could see on the east the hills of Beersheba and Hebron, 30 or 40 miles away. On the north was a tiny glimpse of the blue Mediterranean. In the southern desert we could generally see an amusing mirage, showing a bay of water with houses and piers around it, where nothing but sand really existed. A very real and ancient camel track crossed the plain, "going down into Egypt," on which I counted 140 camels in line one day tramping along. At another time, as there was a famine in the land, we saw, day after day, Bedawyn tramping north, each family with its goods on a camel

or donkey, and their half-starved sheep and goats trotting beside them. Here and there, across the plains, were little heaps of British barbed wire and trenches, an occasional Bedawy tent or hut, or solitary Arabs, each with a camel ploughing the ground for a very doubtful crop. On the west, but far out of sight, lay the village of Deir el Belah in its palm grove, the site of the Tommies' "Dear old Bella" hospital, and also of a fortress destroyed by our King Richard I.

Sir Flinders Petrie was excavating this mound, as it was the site of the Philistine city of Gerar, and probably a prehistoric camp. Here, as he tells us,[1] the Philistines kept a viceroy with the title of Abimelech to collect corn and export it to their homeland, Crete. Here Abraham and Isaac resorted, and some jealousy arose about the wells and corn which their tribe required, till they moved away to Beersheba. It was also a great border fortress, the scene of many Assyrian and Egyptian struggles. Indeed, Palestine has always been the Flanders of the near East from Sumerian times down to Napoleon and Allenby.

On digging into the level hill-top, strewn with endless fragments of pottery, one soon came down on great buildings, Persian granaries, Egyptian and Assyrian fortresses built of sun-dried bricks and littered with the weapons and scarabs, the idols and the cooking ovens of people who lived here from 1500 B.C. to 450 B.C. In the small section of one town-level excavated before I left, I counted about 28 chambers, some of them 30 feet by 15 feet, with walls still 12 or 15 feet high. There were, in fact, six towns, one built on the ruins of another, and below them the remains of camps of the Bronze and Neolithic periods. The date of each town could be approximately fixed from the things

[1] See *Ancient Egypt*, 1927, Parts I. and II. Macmillan & Co.

found in it. Thus immense quantities of pottery had to be sorted, drawn to scale and classified as Egyptian, native, Ægean, Cypriot or Cretan, of such and such a period. Coins, seals, a hundred and ninety weights for traders, bronze and iron lances and arrow heads, eighty flint sickles, an engraved Assyrian cylinder of lapis lazuli, a beautiful gold frontlet, nine gold earrings of about 1200 B.C., necklaces of carnelian agate and crystal, and various pottery figures were turned up to the delight of the diggers, who got a reward for each authentic find.

At the foot of the hill lay vestiges of a Roman town with cisterns, mosaic pavements, tombs, and the usual mounds of pottery. Someone has said that the Romans seem to have spent most of their time in making and breaking up pottery, and indeed a mound of fragments 30 feet high makes one realise the huge consumption of it, in the days when it replaced our barrels, cans and boxes, as well as our crockery. In a radius of three miles were the remains of four towns, showing the great population under the Roman peace, where now only a few Bedawyn get a scanty living. Whether under British rule it can once more be made a fertile country, by rebuilding the irrigation dams and by afforestation, remains to be seen. They have in this southern area 12·5 inches of rain, but it runs off at once, leaving the ground fissured in places very deeply, just like a photograph of the moon's surface.

For the greater part of our time our only water supply was a well two miles away in the desert, and the springs at Gaza nine miles distant. Camels had to be kept going bringing water from one place or the other, in great pottery jars, every day. Besides a few skilled Egyptians, Sir Flinders employed Bedawy men and boys, whose number gradually amounted to 370. Every Arab taken on as a digger required three children

who carried off the earth in baskets, on their heads, and threw it down a shoot. What merry little imps these boys were! Their great delight was to push one of their fellows over the shoot, if not watched. Down he would roll a hundred feet or so, but always came up unhurt. Since men, girls and boys were all barelegged, cuts and sores were very common. It was impossible to put on dressings, except in the worst cases, so I went round while they were at work and painted them with iodine, or methylated spirit with a little biniodide. The patients cried out *kuwaiyis* (beautiful), especially if it smarted, and the results were excellent. One day some boys had a scrimmage, stones flew, and five or six cut scalps had to be dressed and sewn up. After work-hours we had a sick parade for serious cases, but the general health was good. Eye troubles were important and numerous. There were a few cases of subacute rheumatism, pleurisy and tonsillitis, and one or two of tuberculosis. Impetigo of the scalp was common, the home treatment for which was a plaster of sheep droppings. Curiously enough we had a slight outbreak of mumps. The cases were sent off at once, and duly notified to the Health Office at Gaza, on a trilingual form printed in Arabic, English, and Hebrew, as all the public notices and time-tables are made out. There were no snake bites, and only three or four cases due to scorpion stings, which returned to work in half a day or so, after incision and soaking in permanganate. Fortunately we had no malaria or sandfly fever, and there was little or no syphilis, though it was common in some districts near. The men all wore Arab costume, which is absurdly like a university gown, with a long shirt beneath, and a fringed towel tied round the head, but very effective and striking. The women and girls were always in black, closely veiled, and having great strings

of coins hanging between their eyes. Sheiks and other well-to-do people would come round, laden with rifles and swords, on gorgeously caparisoned horses, but our men usually kept their weapons at home, or out of sight. Our watchman, or guardian appointed by the tribe, carried, indeed, a huge sabre, and was an expert slinger, by the way, like his ancestors. The Government had been powerful enough to stop all raids and tribal wars for the last year or two in the south, and it really was wonderfully peaceful and safe. One could wander about by day or night without risk or incivility. Once or twice a week mounted police patrols came round to ask whether we were all right. Every week, too, our camel went to Gaza to bring us the welcome post-bag, vegetables and fresh meat to add to our tinned foods. One was struck with the docility of the animals. Horses and donkeys rarely had bits, whips were little used, sheep of course followed the shepherd like dogs, and few, if any, of the beasts were castrated. The camels had views of their own about a proper load, but toiled along or knelt down at command, without blows as a rule.

One night I was invited to an entertainment, and went with a friend to an appointed spot near some tents. The moon and stars shone dimly, and we had a ceremonious welcome when we met our Bedawy hosts, who spread rugs for us on the sand and regaled us with tiny cups of sweet tea. Soon there were fifty men assembled, who formed a line, swaying to and fro, and chanting songs with wild refrains, sometimes advancing and sometimes retreating. This line of weird figures, some in their cloaks and some in pure white, ceaselessly singing and posturing, made a strange picture under the stars, and behind us was the great dark mound of Tell Gemmi. We might have been looking at some

mystic rites of their Philistine ancestors; but no, it was only a genial social "Fantasia" of poor Arabs who had been toiling hard all day. How they found the energy to dance and sing for three or four hours on their native sands astounded me. After a while one or two of the men went to the tents and fetched three women in their black robes wearing the long shawl which reached from head to foot. One of them, holding up her shawl, took a sword and waved it vigorously above her head, as she glided through a gentle dance in front of the line of singers, who alternately advanced and retreated before her. Another song seemed to imitate the growling of wild beasts, which was given most realistically. Here the woman appeared to be attacked by the baying animals, but drove them off by her sword. Other scenes followed, but no musical instruments accompanied the singers, though frequent rounds of hand clapping marked the cadences. The endurance of the men was shown later on in the Ramadan fast, when, in spite of dusty work, not a drop of water or food was taken from dawn till sunset. It was a fine performance of a hard duty, but the hours of labour had to be altered to meet their physical exhaustion. The people in this district are a mixed race; most of them had black hair and eyes with good features and well-filled skulls, but there was at least one family with flaxen hair; also a very few negroes. The Arabs in their bearing and habits are not unlike our Highlanders of 1745, and have similar failings, but they are proud fighting men, dignified and courteous to friends, and live the hardest of lives.

One day a sandstorm began and darkened the sky. Our clothes, books and bedding were soon full of the hateful dust. A hurricane of wind, hail and rain followed. The rattle of the hail on our iron roofs, hour after hour, was a thing to be remembered. During the

night I was called out to attend to a student who had fainted, after running out in the storm to get help to replace a roof, which had been blown off. Two or three days of this downpour caused a flood around us, and turned our wady into a fine river, but in a week or so the sandy plains were dry again and the water all lost. In general, however, the climate in the winter months was perfect—daily sunshine and blue skies, and a temperature in the afternoon of 70° to 75°. Swallows and larks flew about the plain, and kites, kestrels and pigeons around our cliff; brown lizards played in the sun on every bank, while at night the jackals and Arab dogs called to each other under the brilliant stars and moon. At Gaza and Deir el Belah were palms and gardens of spinach, tomatoes, oranges, cucumbers and huge cauliflowers. Excellent fish, too, were caught in the sea. In a few years there will probably be fine watering places and good hotels on the Palestine coast, for the climate seems much better than that of the Riviera, and the sea is of the most exquisite blue imaginable. Indeed, Haifa and Beirut in French Syria are now charming places to winter in, and the Italians have built a huge hotel and casino at Rhodes. At Beirut at the foot of the Lebanon mountains there are good schools, and a wonderful American University, richly endowed and with fine buildings. It has a great medical school and printing press, and trains most of the doctors, engineers, civil servants and nurses for Palestine, Syria, the Sudan, Irak and the countries around. At Gaza one of the high school boys showed me a beautiful Arabic edition of Breasted's ancient history, printed at Beirut, which had been given to him.

The scenery of Syria among the Lebanon mountains, with the snow-clad Hermon, is magnificent; but

Palestine consists of a bare rocky table-land, with low-lying coastal plains on the west, which, for a few miles at Esdraelon only, spread right across the country and divide the table-land into two. On the south the low plains form a sandy desert down to Egypt, and on the east is the strange depression of the Jordan valley, which at Jericho is 1,500 feet below sea level. As Jerusalem is 2,500 feet above the sea, the change of climate is marked when one motors down the 21 miles of excellent road between them.

Jerusalem, except as to its modern suburbs, is dingy, old and crowded within high mediæval walls, a maze of lanes and arcades; but idealised by the remembrance of the endless procession of men and women, Christian, Jewish and Moslem, who have come there, as pilgrims, to worship, from every corner of the world.

Archæologically the discoveries of authentic historical sites almost rival those of the Roman Forum. While I was there they were opening up a great forgotten wall commenced by Agrippa in A.D. 50, and finding near it some of the stone shot probably hurled by Titus in the siege of A.D. 70.

The finest building, of course, is the Mosque of Omar, standing on the site of the temples of Solomon and Herod. Then, too, there is the huge church of the Holy Sepulchre, a noble and impressive pile, but old and faded after 1,600 years of alternate existence, destruction, and repairs. In front of the doors lies the curiously preserved tombstone of Sir Philip Daubeny, a name well known in Bristol. A great charm of the church, to my mind, is that one enters it freely, and walks about at one's will, without fees or beggars. The trend of recent criticism, by the way, is strongly against the rival or Gordon site, outside the Damascus gate. As I am not writing a guide book, I must pass over the many

interesting and authentic places, such as Bethany, Kedron and Bethlehem, which are easily visited.

At eight o'clock one morning I took my seat in a public motor-car, and in five or six hours reached Tiberias, a hundred miles north, passing through Shechem Nazareth and Cana. The road was in perfect order and ran along the table-land, then through fertile valleys and the wide plain of Esdraelon, dotted with Zionist villages, " Balfouria " and others, then up again among the hills of Galilee, till we saw far below us the blue waters of the lake embosomed in treeless but green hills. A few fishing-boats sailed about it, but except for Tiberias there was hardly a house or village to be seen. Close to Tiberias, indeed, are hot thermal springs where baths are being erected, and a charming Scottish mission hospital, in grounds full of shrubs and flowers, lies near the lake. As this is 680 feet below sea-level, the air is decidedly warm. The narrow old streets with many shops cluster round a good hotel and an excellent Franciscan rest-house. Some three miles away on the north are caves, where a Neanderthal skull was recently found. Except for a hospice or two, the sites of Bethsaida and Capernaum are a wilderness, but the ruins of the celebrated synagogue have been disinterred, and its white stone blocks, covered with sculptured leaves and flowers, lie on the ground like a child's box of bricks. Some of the columns have been re-erected, and it is quite easy to make out the plan of the building, an oblong, 75 feet long, divided by pillars into a nave and aisles. The richness of the decoration is striking, the star of David among vines and pomegranates being a prominent emblem.

Another motor-car took us on to Damascus, 85 miles, crossing the upper Jordan above the lake, where the French and English customs officers overhauled us,

one on each side of the bridge. A little north of it is a swamp, where the papyrus still grows. It has disappeared everywhere north of Nubia, except at this spot and in the Cairo Zoological Gardens. We soon saw a different sight as we crossed the elevated plains beyond, viz. the white slopes of the snow-clad Hermon, and after another long spin the buildings of Damascus came in view, backed by a brown bare mountain ridge, and facing a plain full of trees and gardens. Through them and through the town itself tumble the rapid waters of the river Abana, reminding one of Innsbrück or Salzburg. The town has been stormed and sacked at short intervals from the dawn of history, and two years ago the French and the rebels contrived to batter down part of it again. An electric tram took one through a mile of ruins in one section.

It was fascinating to see the passenger cars come in from Baghdad, 540 miles away across the desert, which they do in twenty-four to thirty hours. The Damascus bazaars, especially that of the goldsmiths, and Nassam's huge manufactory of inlaid work and brass goods too, are of endless interest, and if one has the good fortune to stay, as I did, in a private house with a central court full of fountains and flowers, one realises what a charming residence it is in times of peace.

Once more, taking a motor, instead of the train, we went to Beirut, crossing the Antilebanon, then among the vines and mulberries of the rich plain of Caelo-Syria, and mounting the Lebanon range, where the road for miles ran among great snow-drifts, till at last we saw the blue sea in front of us, and began a long winding descent to the coast among olives and pines.

From Beirut an Italian steamer took us to Cyprus, passing the river of Adonis, and Tripoli, then along the coast of Asia Minor to Rhodes, Cos, and the Dardanelles.

The extraordinary beauty of the route was clouded by memories of the terrible events at Gallipoli and Smyrna, and the ghastly loss of life at both places. At Smyrna one of our passengers, who had landed to see the ruins, got arrested for taking a photograph, but succeeded in getting back. We spent some hours at Constantinople as well as at Athens and Naples, squeezed through the lofty cliffs of the Corinth canal, and reached Marseilles in good time.

SOME CLINICAL ASPECTS OF DYSMENORRHŒA.[1]

BY

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IT is probable that dysmenorrhœa, in a more or less degree, is one of the very commonest of the physiological errors which occur in modern civilisation. It is most unusual to find menstruation occurring without some degree of pain or unaccompanied by unpleasant molimina. I, personally, know of two cases only, and they regard themselves as unusually fortunate.

This condition is intimately connected with modern civilisation. Cameron points out that "in large cities" 30 per cent. of women suffer considerable discomfort during the menstrual period, and a very practical reason has been advanced by Professor Tuffier. He states that menstruation is not a normal function at all. In a savage and truly natural state this event must be a rarity in any individual. The woman marries very young, sees perhaps one or two periods, and then becomes pregnant. The next twelve to fifteen months are occupied in pregnancy and lactation, and then possibly one more period occurs before the next pregnancy, so that—as the menopause comes on

[1] A Paper read at a Meeting of the Bristol Medico-Chirurgical Society on April 13th, 1927.

early—the woman only menstruates a dozen times or so in her life. In modern civilised Europe the case is entirely different.

Before discussing dysmenorrhœa, it is necessary to remember the normal mechanism of menstruation. During the last few years a great amount of research has been undertaken on the menstrual function. Shaw, Marshall, and Beckwith Whitehouse, Novak and Schrœder have published many papers, and recently Beckwith Whitehouse has authoritatively summarised the latest views. He states that menstruation is the abortion of the decidua of the non-pregnant uterus; the menstrual flow corresponds with the failing of the corpus luteum when the ovum is not fertilised, and is the "lochia" of a menstrual abortion. This view is now universally accepted, I think, and this is in keeping with the French view that I have quoted, for surely a decidual abortion cannot be regarded as normal. With this conception of menstruation, it is hardly surprising that it should be so frequently complicated by pain and difficulty.

There are three main types of dysmenorrhœa described, and I wish to draw attention to a fourth type which I find to be very common.

These are:—

1. The spasmodic or intrinsic type of Blair Bell.
2. The congestive or extrinsic type of Blair Bell.
3. The membranous type.
4. The "mixed" type.

The proper recognition of each type makes all the difference to the principles of the treatment required.

1. *Spasmodic Dysmenorrhœa* is easily diagnosed as a rule. The patient gives a history that the pain began with the first period and has been present at

every period since. The pain is acute and colicky in type, sometimes so severe that the patient vomits or even faints. The pain begins before the flow, and is usually much better when this has been established twenty-four hours or more. The loss is almost always scanty and irregular, and between the periods there is usually no discomfort.

If the patient be examined, in most cases a small, ill-developed uterus will be found. Frequently it is "cochleate," *i.e.* acutely anti-flexed, and may also be retroverted; in the angle made by the cervix and body irregular masses of muscle tissue are developed, and Cameron lays much stress on the consequent spasm of the internal os. In these cases the pain is not due to "pinhole os." Blood can pass up a very small capillary tube, and could certainly get out of a cervix which will admit a sound. The pain is due to irregular contraction of a malformed uterus, *i.e.* to muscular cramp, and is truly "intrinsic."

2. In the second, the *congestive or extrinsic* type, on the other hand, the history is that of a girl having normal periods for some time, when they become painful. The pain is dull and aching, the flow profuse, the pain is localised to the back and "drags down" into the pelvis. Between these periods the pain is constantly present, though to a less degree. On examination it is usual to find the uterus large and often fixed in a position of retroversion. The fornices are tender and often the ovaries and tubes are enlarged and palpable; in fact, there is a typical pelvic peritonitis. Further inquiry will elicit the fact that about 50 per cent. of these cases follow a confinement or miscarriage, and, in many of the remainder, appendicitis or an ascending infection will be described as a precursor

of the trouble. Here the pain is due to the surrounding organs being adherent and inflamed, a condition made much worse by the normal pelvic congestion of menstruation.

3. *Membranous dysmenorrhœa* is a very rare condition. Personally I have only seen one case, in which the patient passed a large bolus-like cast of the endometrium. I imagine the pain was really due to obstruction, similar to that occurring when a polypus is extruded through the os. The cause is probably due to a failure in the ferment which normally causes the break up of the endometrium.

4. *The mixed case* is, to my mind, very common. There is nothing to prevent a girl with true intrinsic spasmodic dysmenorrhœa becoming infected with the gonococcus or getting an attack of appendicitis. I have operated on many such patients from whom my surgical colleagues have removed a suppurating appendix a year or so previously, and it has been the supervention of the extrinsic on the already existing intrinsic pain that has induced them to undergo a further operation. The importance of this will be seen when the question of treatment is considered.

TREATMENT.

It is probable that greater strides have been made in the treatment of this condition than in any other gynæcological disease. The best indexes of this are the statements of medical officers in charge of large girls' schools. I was told by one such doctor that twenty years ago 75 per cent. of the girls had two or three days off work every month, and now only 10 per cent. were so excused. This is surely a remarkable improvement. The treatment must be considered under each type of case.

Spasmodic Dysmenorrhœa. — In this condition an enormous amount of good can be done by moral suasion. The girl must be encouraged not to consider herself an invalid. Exercise, the quieter games, and—above all—hot baths, will, in most cases, enable her to carry on her normal school life, and frequently the symptoms improve out of all knowing. This is due, I think, partly to development and education of the faulty uterus, and partly to the training in disregarding an unpleasant symptom. The latter factor is probably more powerful than is imagined, and an eminent psychiatrist told me that all cases of spasmodic dysmenorrhœa could be cured by psycho-analysis. This seems to me to be rather a strong claim, but I am sure that it is well founded. Should the pain be really severe, it will be found that rest in bed is very little good, but is convenient in view of the mental disturbance caused in a very young patient. The coal tar and allied products, *e.g.* aspirin, ammonal, etc., are a great help, and I have had several great successes with benzyl benzoate 20 per cent. in alcohol, combined with small doses of chloretone to prevent vomiting. It is unnecessary to state that morphia is more than dangerous for this type of patient. When I was house physician at Bethlem Royal Hospital I saw numbers of patients who had become addicts from being given morphine or heroine for this condition. If these methods fail, I do not think it wise to leave the patient too long before resorting to operation. The effect of severe and inevitable pain is very great in a child of 15 or 16, and she dreads its monthly recurrence more and more, and may become completely neurotic on this point. In 75 per cent. of cases a complete cure can be obtained by dilating the cervix to 14 Hegar. This simple operation has fallen into disrepute, and I am certain

that the cause is that it has been done so often for the wrong type of dysmenorrhœa. It is quite useless to dilate the cervix if the patient is suffering from a chronic appendicitis or salpingitis, yet every day one sees cases of extrinsic dysmenorrhœa which have been so treated, and I am often told that "dilating has done no good" in a case where it was never indicated. In a true spasmodic dysmenorrhœa the passage of dilators straightens out the anti-flexion and ruptures the abnormal muscle masses about the internal os and produces instant and usually lasting relief. It is most important that the dilating be done slowly and carefully to avoid lacerations, or, as pointed out by Dr. Drew Smythe, the resulting scar tissue will cause a recurrence of the pain in an aggravated form. In all these cases I administer thyroid gland in hope that it will aid the uterus to develop to a proper extent, but I find it hard to say if it is very efficacious.

If this treatment is useless, it is difficult to know what to do. I have once done a subtotal hysterectomy in an unmarried woman of 31, whose life was a misery to her. She is now much improved, and very grateful, but I think it is a barely justifiable operation, and only to be resorted to in extreme cases, in women who are over 30 and unlikely to marry. Two other methods are described and very good results claimed, viz. sympathectomy of the plexus lying on the sheath of the internal iliac artery, and section of the "pelvic nerve" on the fourth lumbar vertebra. I have no personal experience of either method of treatment, but the results claimed are encouraging.

The *extrinsic cases* need quite a different line of treatment. Here the cause must be found and dealt with. The majority of cases do very well on aperients, *really* hot douching carried on for a quarter of an hour

at least, and rest in bed during the flow. I do not find tampons much use, and they often cause pain by pressing on the swollen pelvic organs. Hot antiphlogistine tampons are useful, but require a skilled nurse to insert them. Usually a few weeks' treatment on these lines will improve the patient so much that she will not worry about her dysmenorrhœa, but if she does not get better fairly soon, it is necessary to open the abdomen and deal with the pelvic adhesions and displacements which are the root of the evil. I believe the appendix to be the most frequent cause of this type of dysmenorrhœa, and in a series of 150 operations for pelvic peritonitis I found it more or less involved in 82 cases.

It is obvious that in the "*mixed type*" of dysmenorrhœa both operations are necessary if the conditions are bad enough to warrant operation at all. It is most disappointing to open an abdomen and have the patient return in five or six months and tell one that the backache is gone, but that she still gets the colic or *vice versa*. I now do both operations at one sitting, and the dilating must be done first. If a Gilliam or similar ventrosuspension is performed, it is almost impossible to pull down the cervix and dilate it efficiently afterwards. This, of course, entails change of gown and gloves during the operation, but it is well worth it in results.

For the *membranous dysmenorrhœa* no efficient treatment has been devised. Curettage is recommended by some and gland therapy by others. My own experience of one case is quite useless to me to help form an opinion. She did not improve on any treatment at all, and finally had her uterus removed by somebody else.

There is one aspect of this complaint that I should like to stress, namely the great importance of spasmodic

dysmenorrhœa about the time of the menopause, when it has not been present before. It is frequently the earliest sign of carcinoma of the body of the uterus, that organ trying to expel the growing mass in its interior, and so causing the colic. It is also the typical symptom of that interesting tumour, the endometrioma or adenomyoma. Here endometrial grafts or rests in the ovaries or other pelvic organs are found to contain hollow cavities into which menstrual blood is effused when the uterus menstruates. This blood being under great tension causes severe colicky dysmenorrhœa. It often occurs about the menopause, and I have twice mistaken the condition for a tubal pregnancy. The onset of spasmodic dysmenorrhœa in a woman of about 40 indicates an immediate curetting, and I have never regretted so doing, for a number of early carcinomata of the body have been found, and removed with every prospect of a cure.

SIX CASES OF CANCER ARISING IN TISSUES WITHIN THE DUODENAL LOOP.[1]

BY

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OF the tumours found arising in the tissues surrounded by the loop of the duodenum carcinomata are the commonest. They rapidly produce symptoms due to obstruction of ducts. Their size is therefore small in proportion to the severity of the symptoms, which may produce a fatal result before any extensive infiltration or metastasis has taken place. The nature of the obstruction depends on the site of the growth, its direction and rate of extension, and the anatomical arrangement of the ducts.

Site of Growth.—The following epithelia, all normally included within an area of one square inch, may give rise to carcinoma. (Fig. 1.)

(1) Columnar epithelium of the duodenal papilla. Epithelium of Brunner's glands. Glandular epithelium of pancreatic rests in the duodenal wall.

(2) Columnar, plicated, gland-bearing epithelium of the ampulla of Vater.

[1] A Dissertation presented for a Martyn Memorial Scholarship, 1927.

(3) Columnar, gland-bearing epithelium of the lower end of the common bile-duct.

(4) Columnar epithelium of pancreatic ducts. Glandular epithelium of pancreatic acini. Irregular cubical cells of islets of Langerhans.

The site of origin of a cancer in this area is sometimes difficult to localise even on microscopical examination. Some clue is given by the histological character of the tumour, but this may not be of uniform type throughout. A classification, such as that given above, and based on the kinds of epithelia normally present, is generally adopted, but accurate localisation may be difficult when the tumour arises at a point where two types of epithelium merge into each other.

Statements of different observers as to the relative frequency of the various types of growth cannot be satisfactorily compared, for in addition to geographical and other variations, there are differences in the classifications used for obtaining the figures.

Pancreatic carcinoma is the commonest of those in this group. Hale White[1] found it in 5 per cent. of a series of cases of cancer; 85 per cent. were in the head of the gland, Kaufmann[2] gave it as 1·76 per cent. of malignant tumours at autopsy; Korte[3] as 2 per cent. of 2,943 malignant tumours examined.

Duodenal papilla carcinoma was found by Geiser[4] in 28 per cent. of cases of carcinoma, constituting 20 per cent. of duodenal carcinomata.

Cancer at the lower end of the common bile-duct was found in 23 of Rolleston's[5] 90 cases of cancer of the extra-hepatic bile-ducts. Colwell,[6] taking 3,300 cases of cancer found 0·33 per cent. in the extra-hepatic bile-duct. From these figures it appears that less than one in every thousand cases of cancer occurs at the lower end of the common bile-duct.

Cancer of the ampulla of Vater was found once in Colwell's[6] 3,300 cases. It is rare. Rolleston collected 19, Georges[5] 20, Outerbridge 100 cases.[5] The observers are not equally careful to differentiate these from the cancer of the duodenal papilla or bile-duct.

Juxta-ampullary cancer of Wirsung's duct is very rare. A few cases have been described. (Dr. Hadfield's paper gives three other references in the literature.)[8]

Rate and Direction of Spread.—Most of the cases end fatally in less than a year from the onset of symptoms. There are three main types of growth.

(1) Villous, papilliferous, rapidly growing and filling up the duct lumen. The cells are columnar. The growth may spread round the circumference of the duct. Its surface may ulcerate, as in the "cauliflower" growth at the duodenal papilla.

(2) Diffuse, accompanied by more fibrosis, extending along the walls of the duct. For example, the bile-ducts may be transformed into "cancer tubes." Of the same class is the scirrhosis cancer of the head of the pancreas. The cells are cubical and originate in glandular epithelium generally.

(3) Small localised nodules, which are hard from accompanying fibrosis. Bile-duct growths are commonly of this order.

Metastases are not produced by the papilliferous growths. They are most commonly found in cancer of the head of the pancreas. The diffuse and the localised growths may give rise to secondary growths in the adjoining lymph glands and in the liver.

Palpable tumours are according to Miraillé[7] produced by 25 per cent. of 113 cases of cancer of head of pancreas.

In the localities the primary growth does not produce a palpable tumour.

The anatomical arrangement of the ducts is an outcome of their development. The variations in development and in adult anatomy are illustrated by Figs. 2 to 14.*

Two factors which influence the origin of cancer are found in this area: (1) Development, (2) Irritation.

(1) The pancreas and the liver arise as buds from one part of the duodenum. Cell rests may be stranded and maintain their habit of growth.

(2) Irritation produces a reactive proliferation which may become uncontrolled. The irritation may be due to inflammation of glands or ducts, to gall-stones and pancreatic calculi, or to regurgitation of the contents of one duct into another. It may be due to excessive wear and tear in an area where normally three sets of ducts bring together three sets of fluids, each with very

* *Possible Variations in Development.*

1. Common bile-duct may grow with dorsal pancreas, leaving Wirsung's duct alone. (Schirmer 4 times in 104 cases.) (Type G, Fig. 13.)
2. Ventral pancreas may develop from common stalk so that Wirsung's duct opens into common bile-duct some distance from the duodenum. (Type A, Fig. 7.)
3. " Separating septum " may be complete, giving rise to no ampulla, or may be less complete, giving rise to all degrees of length of ampulla or common biliary-pancreatic duct. (Mann.)
4. Ventral pancreas may grow out of wall of gut itself, near common duct, giving rise to separate openings, near each other. (Letulle and Nattan-Larrier.) (Type D, Fig. 10).
5. Pancreatic gland tissue may surround / may not surround } The common bile-duct. (McConnell, *Jour. Anat. and Physiology*, XLIX.)
6. Santorini's duct may be main adult duct. / almost independent, and patent. 4 of 100 cases. / not anastomose. 10 of 100 cases. / not be patent. 20 of 100 cases. } Numbers given by Opie, *Am. Med.*, Phila., 1903, vol. 5, p. 996.

different chemical and physical and physiological properties.

Although the only example of a rare type of growth, that of the juxta-ampullary part of Wirsung's duct, has already been reported by Dr. Hadfield, it has seemed worth while to bring this series together to illustrate the fact that clinical observation of the results of the different kinds of obstruction may furnish data as significant as those of experimental ligature. These results are briefly set out here in tabular form.

Case.	Growths.	Obstruction of				Pain.	Gall Bladder.
		Bile-duct.	Pancreatic Duct	Duodenum.	Veins.		
1	Malignant papilloma of duodenal papilla	+	+	+	−	Multiple.	Contracted.
2	Cancer of lower end of common bile-duct	+	−	−	−	+	?
3	Cancer of lower end of Wirsung's duct	+	+	−	−	+	Dilated.
4	Cancer of head of pancreas	−	+	Slight.	+	+	Normal.
5	do.	+	+	Slight.	−	?	?
6	do.	+	+	+ +	−	+	Dilated.

All the cases here described occurred in males of ages between 48 and 68, and were fatal in six weeks to nine months after the onset of symptoms. In all cases but one there was jaundice, progressive and continuous. Operation was undertaken in two cases only. Both were unsuccessful, as the liver condition was diseased

beyond recovery. All the pancreatic carcinomata had produced secondary growths. The juxta-ampullary carcinoma of Wirsung's duct had produced metastases in the adjoining glands.

Case 1 (Figs. 15 and 16).—A. M., male, age 58. Was admitted to the General Hospital, Bristol, on October 15th, 1926, complaining of coughing up bile and of pain in epigastrium and left iliac fossa.

History of Present Illness.—Three weeks before admission he was ill and had a cough which was diagnosed as influenza. A week later he started to cough up bile, and had epigastric pain which was worse on coughing but was relieved after it. Jaundice appeared and the condition grew progressively worse.

Past History.—He had been admitted to the Hospital in 1915 on two occasions to have paracentesis abdominis performed. The pathological report on the ascitic fluid stated that no tubercle baccilli were found, and the cells were mainly lymphocytes.

Condition on Admission.—Very ill; jaundiced; unable to eat, sleep or breathe except in upright position. Fæces: clay coloured. Chest: Dullness found at right base. Rhonchi heard at both bases. Abdomen: tender, some distension, no tumours or enlarged viscera felt. Sputum: greenish-yellow, mucoid, about 8 ounces per day. No tubercle bacilli, streptococci or staphylococci were found. Blood: Wassermann reaction positive. X-ray: screen examination, showed a dull mass of a rounded shape in about the middle of the lower lobe of the right lung.

Course of Illness.—The signs in the chest became more evident. Wasting and jaundice increased. The cough for a time improved and less bile was brought up. There was no fever. He was continuously drowsy and wandering in mind. Operative treatment was not undertaken as the patient was too ill and the diagnosis obscure. Œdema of the legs and ascites appeared. The lung signs became extensive. Death occurred on January 9th, 1927.

Post-mortem Examination.—The transverse colon was found adherent to the anterior abdominal wall, so that the mesocolon

KEY OF TINTS.

Common bile-duct.

Duct of Wirsung.

Cancerous tissue.

PLATE VIII.

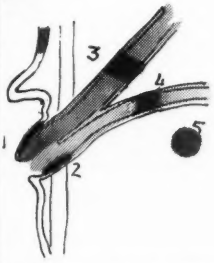


FIG. 1.—*Possible origins of Cancer.*
1. *Duodenal papilla.* 2. *Ampulla of Vater.* 3. *Common bile-duct.* 4. *Duct of Wirsung.* 5. *Pancreas.*
(After Rolleston—after Letulle.)

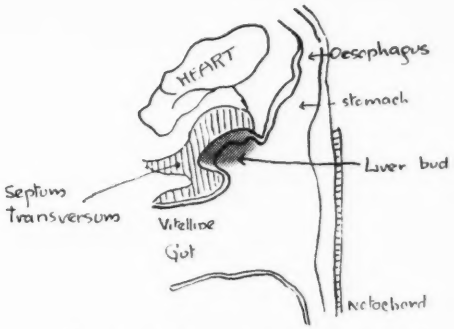


FIG. 2.—*Digestive tube from a* 2.5mm. *(fourth week) human embryo* (Peter Thompson).

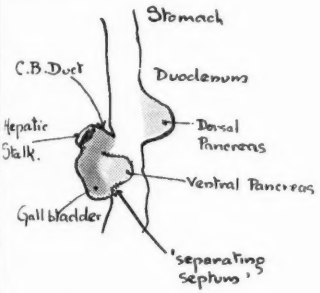


FIG. 3.—*Fore gut from human embryo (fourth week)* (Broman).

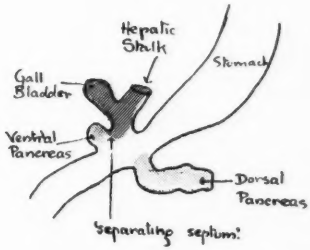
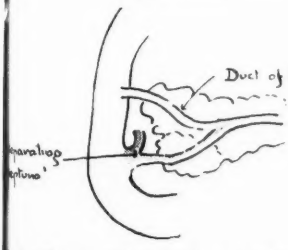


FIG. 4.—*Fore gut from human embryo, 7 mm. long* (Peter Thompson).



5.—*(Fifth week).—Growth of duodenum* [illegible] *the dorsal and ventral pancreas to meet and their ducts to communicate.*
(After Kollman.)

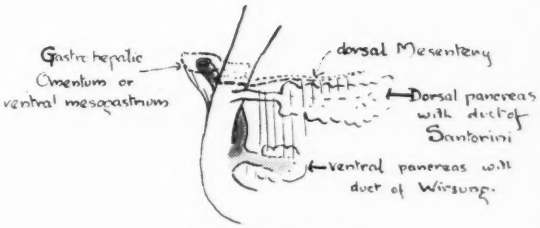

Gastro hepatic Omentum or ventral mesogastrium
dorsal Mesentery
Dorsal pancreas with duct of Santorini
Ventral pancreas with duct of Wirsung.

FIG. 6.—*Sixth week.*—11 *mm.*

NORMAL DEVELOPMENT OF DUCTS OF LIVER AND PANCREAS (FIGS. 2 to 6.)

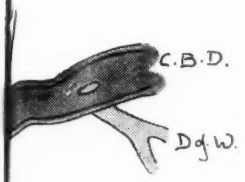
(Figures from Gray's *Anatomy*, p. 140, 1918 ed., and *Human Embryology and Morphology* by Keith, pp. 249, 251, 264, 1912 ed.)

PLATE IX.

ANATOMY OF AMPULLA OF VATER.

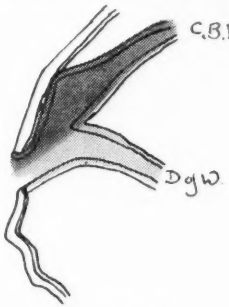
Showing variations in termination of Common bile-duct (C.B.D.) and Wirsung's duct (D. of W.). Duct of Santorini (D. of S.).

After (A—D only) Letulle and Nattan Larrier, *Bul. Soc. Anat. Paris*, 1899, p. 987.



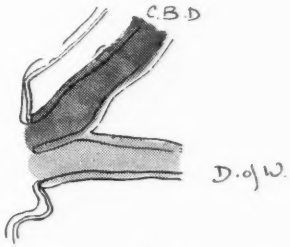
(Type A.)

FIG. 7.—*No real papilla or ampulla. Wirsung's duct opens into common bile-duct.*



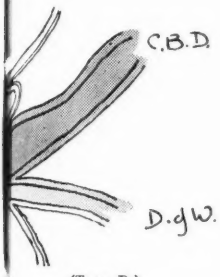
(Type B.)

FIG. 8.—*Papilla and ampulla.*



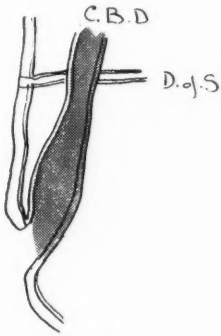
(Type C.)

FIG. 9.—*No papilla nor ampulla. Both ducts open into duodenum together.*



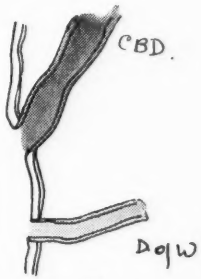
(Type D.)

FIG. 10.—*Ampullary dilatation of lower end of common bile-duct. Duodenal papilla. Two ducts open separately.*



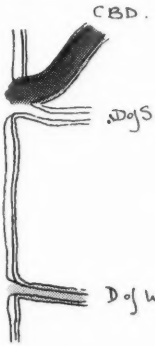
(Type E.)

FIG. 11.—*No duct of Wirsung.*



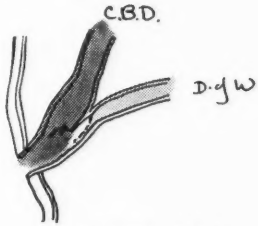
(Type F.)

FIG. 12.—*Separate openings.*



(Type G.)

FIG. 13.—*Common bile-duct opens into duct of Santorini.*



(Type H.) (Similar to Bc C.)

FIG. 14.—*To show valve action of the tongue of mucous membrane between common bile-duct and duct of Wirsung in increased ampullary pressure.*
After D. Chamberlain.

Types C and D.—31% Mann, 28% D. Chamberlain on 100 cases. (*Brit. J. of Surgery*, Jan., 1927).
Type E.—2% D. Chamberlain, 4% Mann.
Type B.—35—33% Letulle and Nattan Larrier.
Type G.—4 in 104 Schirmer.
Type H.—Ampulla ¼ in., 23% D. Chamberlain, 45% Mann; ¼–½ in., 47% D. Chamberlain, 20% Mann.
Type F.—20% Cunningham.

PLATE X.

CARCINOMA OF PAPILLA OF VATER (Case 1).

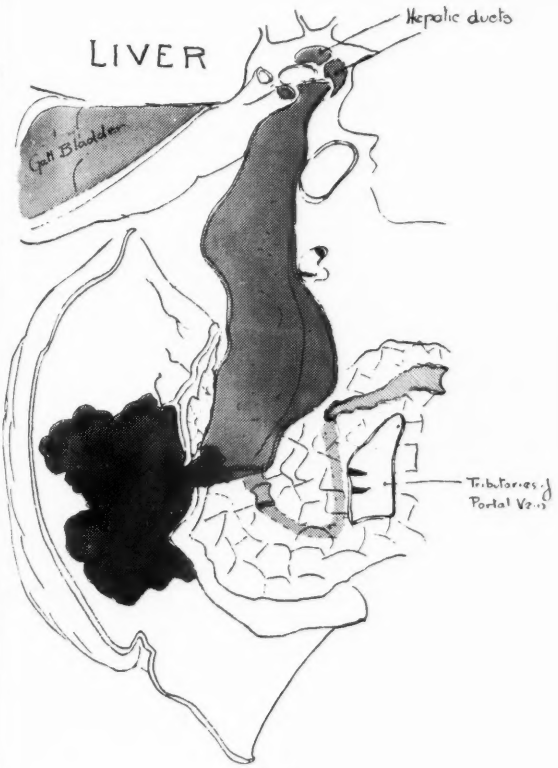


FIG. 15.

FIG. 16.—*Ampulla Type A. Columnar and round celled malignant papilloma.*

CANCER OF LOWER END OF COMMON BILE-DUCT (Case 2).

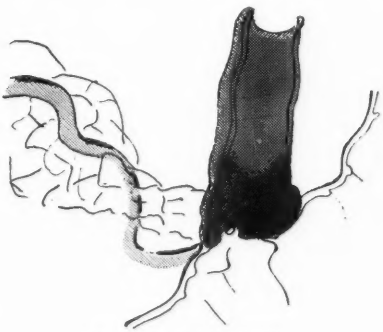


FIG. 17.—*Posterior aspect.*

FIG. 18.—*Ampulla Type A*

PLATE XI.

CANCER OF JUXTA-AMPULLARY PART OF WIRSUNG'S DUCT (Case 3).

(Published by Dr. Hadfield, *Brit. Journ. of Surgery*, Vol. XII., No. 47, 1925.)

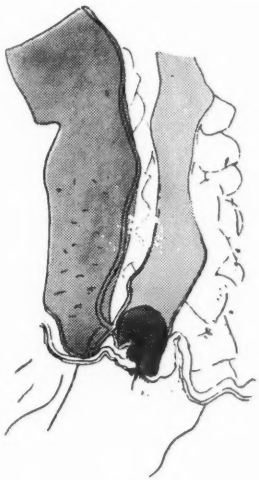


FIG. 19.

FIG. 20.—*Ampulla Type B approximating to D.*

CANCER OF HEAD OF PANCREAS (Case 4).

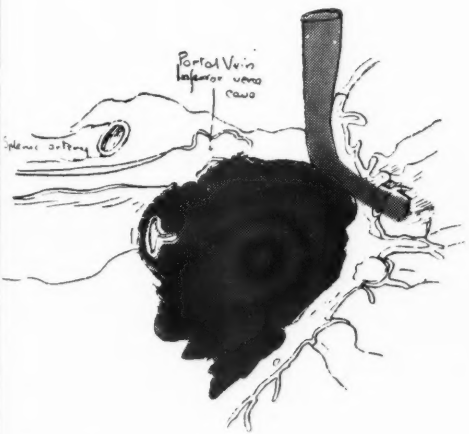


FIG. 21.—*Posterior aspect.*

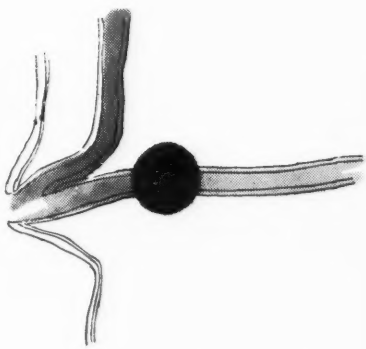


FIG. 22.—*Ampulla Type B (probably).*

PLATE XII.

CARCINOMA OF HEAD OF PANCREAS (Cases 5 and 6).

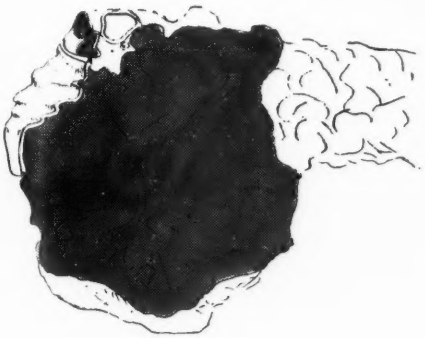


FIG. 23.

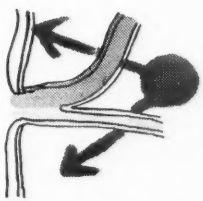


FIG. 24.—*Say Type B.*

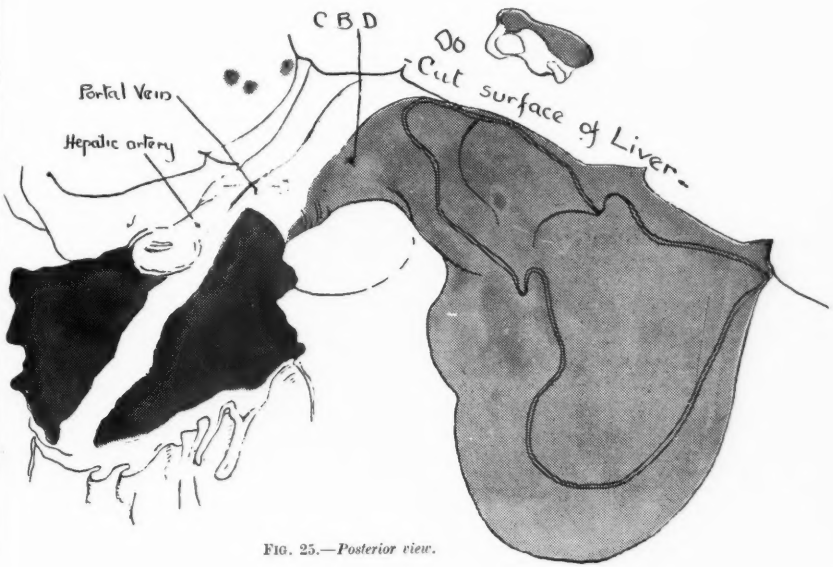


FIG. 25.—*Posterior view.*

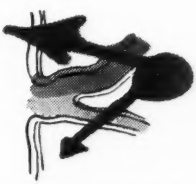


FIG. 26.—*Say Type B.*

effectively cut off the perihepatic region from the lower one containing normal coils of small intestine. In the upper compartment a general suppurating mass full of adhesions was found, mainly around the gall-bladder. There was some ascitic fluid in the lower compartment.

The liver was small, puckered and its surface was nodular. The cut surface showed irregular but extensive interlobular cirrhosis. On the upper surface on the left side there was a large subphrenic pocket of pus. On the right side a necrotic mass, probably a broken-down gumma, was found, containing inspissated bile. This tracked through the diaphragm into a cavity in the lower lobe of the right lung, which communicated with a bronchus. This cavity contained inspissated bile and some small stones. It was about an inch across.

The gall-bladder wall was thickened and covered with adhesions. It was small. The common bile-duct was enormously dilated and full of small pigment stones and thick bile. On cutting it open, the lower end was found obstructed by a large very soft papilliferous growth at the duodenal papilla, which filled the lumen of the duodenum. The duct of Wirsung opened into this dilated bile-duct and was not markedly dilated. The substance of the pancreas appeared normal. The stomach was not dilated. It was involved in the suppurating perihepatic mass. The spleen was enlarged and hard as from chronic venous congestion. The lungs were both adherent to their pleuræ. Patches of broncho-pneumonia were found on both sides. There were some pneumonic areas on the right side. There was bronchitis and tracheitis. The heart was small and brown. Raised patches of atheroma were found in the aortic arch and abdominal aorta.

Pathological Histology.—Sections of the tumour showed an exuberant papilliferous growth. The cells were columnar and arranged on villus-like projections of the submucosa. The cell shape was not constant. In the deeper parts the cells became cubical, at the sides they were regular and cubical. In the centre of the fibrous tissue forming the stalk of the growth rods of cells were seen. These indicate that the growth was malignant and infiltrating the wall of the duodenum.

In the *liver* there was outstanding fibrosis at the periphery of lobules only. The hepatic veins were engaged and also the central hepatic sinusoids. The parenchyma was, in places, atrophied, most markedly at the centre of the lobules. Areas

of necrosis were seen, and of fatty change at the centre and periphery. Small gummata with amorphous centres and fibrous envelope were found in some lobules near the periphery. The bile-ducts were not dilated. They were surrounded by a round cell infiltration. Their epithelium was denuded and in places showed catarrhal inflammation. Numerous proliferating bile-duct buds were seen in the perilobular fibrotic areas.

The *pancreas* showed a condition closely analogous to that seen in the liver. The fibrosis was extensive throughout the tissue, being most marked around the lobules, but also extending to isolate individual acini. The vessels were engorged and numerous. There was no endarteritis. The islets were well seen. The ducts were collapsed, but their lumen enlarged. The larger ducts and duct of Wirsung had somewhat fibrosed walls and irregular mucous membrane.

The pancreatic gland cells in some areas showed fatty change, in others they were more healthy. There were numerous small ducts which could often be seen leading into an acinus. The perilobular fibrous tissue showed the same appearance as that in the liver. It contained numerous rods of proliferating pancreatic duct buds.

A growth of relatively benign character, at the duodenal papilla, was fatal in thirteen weeks after onset of jaundice, by causing *obstruction* of the common bile-duct and pancreatic ducts. No metastases had taken place. Bile was still present in the gall-bladder. The clinical signs of obstruction of the common bile-duct and pancreatic duct were complicated and masked by the condition present in the liver and pancreas for years.

The lesions found post-mortem were found to be of two ages: (1) *Old* syphilitic cirrhosis of liver and pancreas, a well-marked cholecystitis and a probable perihepatitis dating from 1915. (2) *Recent* obstruction of bile and pancreatic ducts, producing dilatation and general jaundice. Recent softening of old gummata in the liver and establishment of a biliary-bronchial fistula; an upper abdominal mass of

adhesions and some suppuration; a spreading bronchopneumonia.

Microscopically the syphilitic lesions only are seen. The well-marked proliferation of bile and pancreatic duct buds, the localisation of the syphilitic lesion in liver and pancreas, the presence of stones in an inflamed gall-bladder, suggest that these may have been factors causing the development of neoplasm at the duodenal papilla.

There is no similar case recorded in the literature. A broken-down gumma producing a biliary-bronchial fistula is in itself rare. In no other reported case was this caused by an obstructing carcinoma.

Case 2 (Figs. 17 and 18).—H. C. J., male, age 55. Was admitted to the General Hospital, Bristol, in December, 1926, complaining of aching in the back and jaundice.

History of Present Condition.—For six weeks before admission he had aching in the back. A week later jaundice appeared and progressively increased. There was continual loss of weight, a dull ache in the abdomen, and tenderness localised below and to the right of the umbilicus.

Blood.—Van den Bergh's reaction, direct and indirect, intensely positive, indicating an extra-hepatic obstruction and destruction of liver cells.

A diagnosis of pancreatic carcinoma was made and laparotomy performed. No growth was found in the pancreas. A cholecyst-gastrostomy was made to relieve the jaundice. Four days later he died, after having rigors and hematemeses.

Post-mortem Examination.—The head of the pancreas was somewhat hardened.

The common bile-duct was dilated. On opening it up a small growth was found at its lower end, just above the point of entrance of the pancreatic duct. The growth formed a localised thickening of the duct wall which had produced

obstruction by obliterating the lumen. The growth was spreading along the walls of the common bile-duct, and had just reached the opening of the duct of Wirsung, causing it to become slightly dilated. There were no metastases.

Post-mortem changes in the tissues had taken place to such an extent that microscopical examination could not be made.

In spite of operation, the patient died six weeks after onset of symptoms. The growth was small, hard, and localised. The pancreatic duct was barely affected. No metastases had formed. There was abdominal pain. The condition could not have been diagnosed from any other obstruction of the common bile-duct.

Case 3 (Figs. 19 and 20).—As this case has already been reported by Dr. Hadfield, a brief summary only is necessary here.

T. G., male, age 48. Was admitted to the General Hospital, complaining of jaundice and increasing weakness. These increased, and a diagnosis of cancer in the head of pancreas was made. An anastomosis between the gall-bladder and antero-superior surface of the stomach was performed, as the condition was thought to be due to non-calculous obstruction of the bile-duct in the head of the pancreas. The gall-bladder, on aspiration, contained thin, opalescent, practically colourless fluid. For three days the patient progressed satisfactorily, but collapse symptoms and some vomiting set in, and he died thirty-six hours after.

Post-mortem Examination.—Showed obstruction and dilatation of the common bile-duct and pancreatic duct by a small white spherical mass with roughened surface, arising at the posterior part of the termination of the pancreatic duct. The growth was strictly localised. It obstructed the common bile-duct by lateral pressure.

An accessory pancreatic duct was found opening separately into the duodenum. Four enlarged lymph glands were found behind the head of pancreas. The gall-bladder and intra-hepatic ducts were enlarged. The portal canals were prominent. Each lobule showed as a deep green spot fading to yellow-brown at

its periphery. The surface of the liver was smooth, green and flabby. The pancreas tissue seemed normal.

Pathological Histology.—The growth showed a spheroidal-celled carcinoma in a dense fibrotic mass, and in an infected lymph gland the normal tissue was replaced by cells similar to those in the growth, except that here there was occasional tubule formation.

In the *liver* there was centrilobular pressure, atrophy and necrosis and bile stasis throughout the liver. The larger bile-ducts were most markedly dilated and their epithelium was desquamating ; all the ducts were surrounded by some inflammatory cell exudate. No other lesion was seen, other than that which might be associated with an uncomplicated obstruction to biliary flow.

The gland tissue of the pancreas was normal, except that around the lobules and ducts there was definite fibrosis and inflammatory cell reaction. The larger ducts were considerably dilated and their epithelium was flattened and hyperplastic in some places.

Case 4 (Figs. 21 and 22).—W. W., male, age 61. Admitted to the General Hospital, Bristol, on October 21st, 1926, complaining of epigastric pain and loss of weight.

History of Present Illness. — For eight months had anorexia, loss of weight, constipation and pain in epigastrium, worse half to one hour after food. Some teeth were extracted and he felt better after.

Condition on Admission.—A tall man, previously strong, now feeling very weak. There was œdema of the feet, and a mitral systolic murmur. Abdominal examination revealed a hard mass in the epigastrium.

The urine yielded 1 per cent. of sugar. Test meal, barium meal, nothing abnormal. The fæces gave no evidence of pancreatic insufficiency, only delayed absorption of well-split fat.

Course of Illness. — The glycosuria disappeared after administering very little insulin and after dieting. The pulse had a small wave, and became irregular in force and frequency.

Pulsation was observed in the epigastrium. The liver edge was felt hard, rough and pulsating. Œdema appeared in the lumbar region and scrotum.

He died on November 15th.

Post-mortem Examination.—A carcinoma of the head of the pancreas was found, occluding the inferior vena cava slightly, and infiltrating the duodenal wall. The growth was not more than two inches across, and affected the head of the gland. It was hard. The common bile-duct opened into the duodenum at the summit of the papilla, which was above the level of the greater part of the tumour.

The liver had large secondary carcinomatous deposits under the peritoneum and also along the portal vessels inside the organ. These were hard, rounded, well localised nodules, surrounded by some hemorrhagic areas.

The gall-bladder was of normal size. It contained a few small stones. The heart showed evidence of old mitral disease. The right side was dilated. Both lungs showed basal broncho-pneumonic changes.

More secondary carcinomatous deposits were found in the peritoneum opposite those in the liver ; also under the pleuræ and the pericardium.

Miraillé found that 82 cases of 113 of cancer of head of pancreas had jaundice. In this case the lesion was diagnosed, although the bile apparatus was not implicated.

Case 5 (Figs. 23 and 24).—G. M., male, age 55. Admitted moribund to the Royal Infirmary, Bristol, in 1913.

Post-mortem Examination.—All tissues were deeply bile stained. The head of the pancreas was enlarged, nodular and hard. There was some central softening, and small hemorrhagic areas were found on section. The growth had reached the duodenal wall, and had involved the common bile-duct, causing it to dilate. There were generalised secondary growths throughout the liver, and the abdominal lymph glands were enlarged, especially the upper ones. Microscopical examination of secondary growths in the liver showed typical appearances of pancreatic cells.

As compared with the previous case, this one differs in that the growth, though of a similar nature, produced biliary obstruction but did not affect the portal vein.

Case 6 (Figs. 25 and 26).—H. C., age 68. Admitted to the Royal Infirmary, Bristol, in 1900, complaining of jaundice and loss of weight. For some months he had felt ill. Seven weeks before admission jaundice, pain and vomiting had set in. On admission he was deeply jaundiced, very thin, and in pain. There was continual vomiting. A hard, globular, tender mass was felt under the right costal margin, possibly attached to the liver. Death took place in a few days.

Post-mortem Examination. — A fairly hard growth in the head of the pancreas was found, which had infiltrated the duodenal wall, occluded the common bile-duct, and become adherent to the transverse colon.

The stomach and pylorus were dilated, reaching almost to the symphysis pubis.

The liver had nodular secondary deposits all over its surface. The cut surface showed dilated bile-ducts and extensive bile-staining. The gall-bladder was dilated to two to three inches below the anterior border of the liver. It contained inky bile.

There were numerous adhesions of the ascending and descending colon to the abdominal wall. In some mesenteric glands were found secondary deposits. Adhesions were noted in the pleural cavities, with old calcareous deposits in the lung apices.

This case is similar to the previous one, but showed more extensive metastases and demonstrated dilatation of the gall-bladder. There was more involvement of the duodenum, producing occlusion and persistent vomiting and dilatation of stomach.

Grateful acknowledgment is due to Dr. Hadfield for permission to quote Case 3, to Dr. Symes for Cases 1 and 4, to Mr. Wood for Case 2, and to Dr. Fraser for Cases 5 and 6.

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[1] Hale White, *Clinical Journal*, 1900, vol. xvi., p. 17; *Guy's Hospital Report*, 1900, vol. liv., p. 17.

[2, 3] Ewing, *Neoplastic Diseases*, quotes Kaufmann and Korte.

[4] Geiser, German sources, quoted by Outerbridge, *Annals of Surgery*, 1913, vol. lvii., p. 407.

[5] Rolleston, *Diseases of Liver, Gall-Bladder and Bile-Ducts*, pp. 691, 703 in 1912 edition; Georges, *Thése*, Paris, 1896, quoted by Rolleston.

[6] Colwell, *Archives of Middlesex Hospital*, vol. v., 1905, p. 123.

[7] Miraillé, *Gazette des H pitaux*, 1893, quoted by Hillier and Goodall, *Archives of Middlesex Hospital*, vol. ii., p. 1.

[8] Hadfield, *British Journal of Surgery*, vol. xii., 1925, p. 47.

Reviews of Books.

The Study of Medicine. By ALEXANDER MILES, M.D., F.R.C.S., LL.D. Pp. vii., 92. Edinburgh: Oliver & Boyd. 1925. Price 3s.—This brochure is intended to help the student to realise at the beginning of the medical curriculum the unity of his course and the interdependence of its several parts. It shows why in addition to a general education the medical student must have a working knowledge of chemistry, physics and biology, it points out the bearing of anatomy, physiology, pathology and pharmacology upon the practice of medicine, and finally discusses how the "professional" subjects, medicine, surgery, midwifery and the allied specialities, are applied in the interests of the patient, or, in certain branches, in the interests of the community. It is no bad book for the young student; it is a better one still for his teacher, growing old and perhaps fossilised in his own narrow layer of knowledge.

What's Best to Eat. By S. H. BELFRAGE, M.D. Pp. xi., 199. London: William Heinemann Ltd. 1926. Price 7s. 6d. —Everyone nowadays is interested in his food. As the author says, "The well-to-do community make of their meals a social function, and by the elaborateness of the menu seek to establish their social position." But he puts a sting in the tail of the sentence when he adds, "at the risk of their health." We should all be grateful if we could be taught how to be socially successfully without risk to our health. The only trouble about a book like this is that it seems almost to postulate the desirability of being aware of the metabolic and mechanical processes of digestion. Whereas we believe that the happiest individuals don't even know how many stomachs or colons they possess. In this volume there is a considerable amount of fact about food values and the like, combined with a good deal of speculation about the dire effects of constipation. But we really must pause a moment before the sentence, "It is no exaggeration to say that constipation may well bring the downfall of civilisation in its train." We expect to have our flesh made to creep, but perhaps the story is reserved for a subsequent volume. We read on and discover that we might individually develop degenerative conditions of the liver, kidneys and skin, but the

threatened disaster to civilisation is not revealed. The practical supplement by Lucy H. Yates, M.C.A., contains some attractive cookery recipes. It would be almost worth while risking obesity to live daily on her "brown scones."

The Elements of Medical Treatment. By ROBERT HUTCHISON, M.D., F.R.C.P. Pp. vii., 163. Bristol: John Wright & Sons Ltd. 1926. Price 7s. 6d.—When Dr. Hutchison writes a book it is sure to be both interesting and instructive, and this is no exception. For several years the author has given an annual course of lectures on elementary therapeutics at the London Hospital. His students asked him to publish them, but he never thought it worth while. But as an examiner he began to think that there might be room after all for such a book. It is curious what bad judges authors may be of the value of their own works. Here is Dr. Hutchison putting into the hands of the students not merely the cram-book which will enable them to pass their final examination, but a book which will smooth the rough pathway from pupilship to practice in a fashion unknown in modern times, and yet he reckoned it "scarcely worth while." We can only advise every student to buy the book and learn it by heart. He will not only pass his examinations, but having qualified he will find he doesn't feel half so foolish when he begins prescribing for his first patients. The scheme is to consider various diseases or symptoms and deal with the treatment under the heading of general management, diet, drugs and physical treatment. One small point of great value is the piecemeal dissection of each prescription given. We have one improvement to suggest, the illustration on p. 112 ought to be entitled "Before and after reading Hutchison's *Elements of Medical Treatment*."

Imhotep, the Vizier and Physician of King Zoser, and afterwards the Egyptian God of Medicine. By JAMIESON B. HURRY, M.A., M.D. Pp. xvi., 118. Oxford University Press: Humphrey Milford. 1926.—Dr. Hurry, of Reading, so well known by his writings on vicious circles in disease, has utilised his leisure time, as well as two visits to Egypt, by collecting all that has been made out as to the story of Imhotep, whom the ancient Egyptians venerated as a great physician, and finally placed in their pantheon. How he originally won such fame as one of the first great healers is an interesting question, but it must be confessed that the facts known as to his life are few. He was the vizier and architect of Zoser 2980 B.C., the king who built the first temple of Edfu and the step pyramid of Sakkarah,

the first stone pyramid. Imhotep was credited with various treatises on medicine and architecture, but practically all his writings perished about or before the Christian era. His reputation was so great that he was soon regarded as a hero or demi-god, and temples were built in his honour by the son of Cheops. Finally, under the Persians he was declared to be the god of medicine and the son of Ptah. Under the Ptolomies he was identified with Asclepios, and temples at Philæ, Thebes, Memphis, with incubation rooms for the sick, were dedicated to him. Even now endless votive statuettes of him as a demi-god are found. Many show him seated with a papyrus roll on his knees. Dr. Hurry gives us numerous beautiful photographs of these and of the temples, and an interesting account of Egyptian medicine and physiology, some of it even earlier than the time of Imhotep. The bibliography and the references to authorities for his life and cult on almost every page add greatly to the value of this charming little book.

Diagnosis and Treatment of Venereal Diseases. By DAVID LEES, D.S.O., F.R.C.S. Pp. xvi., 605. Edinburgh: E. & S. Livingstone. 1927. Price 15s. net.—The time is overripe for a reliable practical text-book on the Diagnosis and Treatment of Venereal Diseases from the standpoint of modern technique and with experience gained from the use of modern methods. David Lees writes from a considerable experience, and has carried out the work of advising practitioners and students with admirable skill and attention to all practical details. It is difficult to praise this book too highly, not alone for its balance in the presentment of the subject matter, but also for its admirably practical treatment, and for the omission of no detail which can make for the comprehension of the "when," "why" and "wherefore" of the tests and drugs. Where instruments are mentioned, their use is explained; where laboratory tests are invoked, these also are described and their reliability discussed. Dogmatism is nowhere overstressed, but the hand of the experienced specialist is everywhere in evidence. This book appeals to one as a safe guide, one of sound practical usefulness, and of easy reference. Scientific progress is advancing so rapidly in these subjects, that it is to be hoped that fresh editions will be kept up to date, and that this work will have a long and honoured career.

Diseases of the Heart. By FREDERICK W. PRICE, M.D., F.R.S. Second Edition. Pp. xvi., 534. Oxford University Press. 1927. Price 21s.—In bringing out a new edition of

this well-known book, the author has introduced a good deal of new matter. For example, there is a summary of the "circus movement" view of auricular fibrillation, and the therapeutic use of quinidine sulphate is fully described. The subject of cardiac syphilis receives a more adequate notice than in the first edition; but the clinical picture of coronary thrombosis, on which so much has been written of late, is imperfectly sketched. The author evidently sees cardiac disease through the window of electrocardiography, and the book suffers from this limitation. Nevertheless, it is an honest attempt to make the new cardiology intelligible, and for this reason deserves the success which, we are told, has marked the appearance of the first edition.

Manual of Medicine. By A. S. WOODWARK, C.M.G., C.B.E., M.D., F.R.C.P. Third Edition. Pp. xi.,523. Oxford University. Press. 1927. Price 15s.—This is one of the best-known "cram" books on medicine. The last edition appeared seven years ago, and we may well believe that—as the author says in his preface—its revision necessitated so many alterations and additions to the text that an enumeration of them is impossible. We have tested its comprehensiveness by looking up references to recent work, and while there are several notable gaps, we consider that on the whole the task of revision has been adequately fulfilled.

Hernia and Hernioplasty. By E. M. COWELL, D.S.O., F.R.C.S. Pp. xvi., 128. Illustrated. London: H. K. Lewis & Co. 1927. Price 9s.—This volume really consists of two portions. Under the heading of hernia, the author in the first eight chapters has collected in a concise form the results of numerous papers. Under the historical review is mentioned the fact that Mr. Steele, of Bristol, in 1873 performed the first open operation in England for a reducible inguinal hernia. Clearly-written chapters on surgical and morbid anatomy follow. The author then refers to recent work on fascial grafts. He concludes that under ordinary circumstances the conjoint tendon and Poupart's ligament will not unite when sewn together. He therefore condemns the Bassini type of operation. The second portion of the book which may be placed under the title of hernioplasty, consists of a detailed description of the author's own operation. It is profusely illustrated by photographs, but these are a little difficult to follow. In a future edition some diagrams would be helpful. The special feature of the operation consists in using two pedicled autofascial grafts cut from the external oblique aponeurosis. These

flaps are stitched to Poupart's ligament beneath the cord. A special loop thread and blunt-edged needle are used. The patient gets up a week after the operation, and returns to work in one month. Operation is always performed on both sides, even if the lesion is clinically unilateral. It is not usually required in children, but may be used up to the age of eighty. The book ends with an appendix on the Workmen's Compensation Act, and on Life Assurance by Dr. Otto May.

Epidemic Diseases of the Central Nervous System. By ARTHUR SALISBURY MACNALTY, M.A., M.D. (Oxon). Pp. xiii., 194. London: Faber & Gwyer (The Scientific Press). 1927. Price 12s. 6d. net.—This volume contains in an expanded form the Milroy Lectures delivered before the Royal College of Physicians, London, in 1925. Three epidemic nervous diseases are considered from the epidemiological standpoint, namely cerebro-spinal fever, acute poliomyelitis, and encephalitis lethargica. These diseases are of particular interest, because we have no authentic records of previous epidemic cycles of poliomyelitis and encephalitis lethargica; possibly we are still in the shadow of their first epidemic periods. Dr. MacNalty has written a fascinating book, one which without flattery may be compared with William Budd's famous treatise on "Typhoid Fever." But the problem offered for solution seems even more involved. In typhoid fever it was evident at an early stage of Budd's inquiry that the disease was transmitted from one patient to another. Here in the case of poliomyelitis this may still be true, for as the author says, "personal infection either direct or indirect through a carrier, is the chief if not the sole means of spread of poliomyelitis." What adds to the difficulty of the inquiry is the fact that many temporary carriers in these epidemic nervous diseases undoubtedly do not contract the disease. The meningo-coccus of Weichselbaum has been recognised as the cause of cerebro-spinal fever, and it is known that in epidemic periods carriers of the mening-ococcus are widespread among the population of the area affected. Yet even in cerebro-spinal fever we do not know the nature of "that mysterious catalytic agent of infection which is termed susceptibility." Our ignorance of the infective factors necessary to produce the diseases acute poliomyelitis and encephalitis lethargica is even greater. Dr. MacNalty does not solve the riddle once and for all, as Budd succeeded in doing for typhoid, but he presents the problem and the facts bearing on it in a most interesting and readable way.

The Health of the Child of School Age. Edited by Sir THOMAS OLIVER, M.D., LL.D., D.C.L., F.R.C.P. Pp. viii., 204. Oxford University Press. 1927. Price 6s.—This book is designed, as stated in the Foreword, particularly for teachers. The chapter on Diet in Schools is excellent, and the school is fortunate which possesses a doctor who combines such sound principles and sound practice. In the chapter on Infectious Diseases, we find the following statement: "Should the number of cases of scarlatina threaten to become large, the medical officer would have reason to suspect the existence of some insanitary condition in or near the school premises." For many years epidemiologists have been trying to remove from the public mind the idea that our ordinary zymotic diseases may be caused by insanitary conditions, and we are sorry to see this doctrine propagated. On page 109 parents are recommended to expose their healthy children at an early age to the infection of measles. We protest emphatically against this teaching. Measles is a very grave disease, responsible for a heavy mortality, greater by far than that of diphtheria and scarlatina together, and every year by which the attack is postponed diminishes its risks. The serious sequelæ which may ensue from measles are well set out on page 125, in the excellent chapter on Affections of the Nose, Throat and Ear in this book. We are rather surprised to see no allusion to the Schick method of immunisation against diphtheria. In the chapter entitled "The Eye Troubles of School Life," errors of refraction are not dealt with. This is a most serious omission, and it cannot be regarded as a consolation to the purchaser of the book that the author has written or lectured on the subject elsewhere. On the other hand, trachoma, glare-asthenopia, and hay-fever are dealt with at some length. These are not very common eye diseases of English school children. In the chapter on Preventable Deformities the author states that dried milk has only half the anti-scorbutic value of fresh milk. This is correct in regard to milk dried by the older spray process, but is not true in regard to the modern roller (Just-Hatmaker) method of drying. The statement is to be regretted, as dried milk has a definite and well-recognised value, especially in times of epidemic diarrhœa. In the section entitled "Prevention of Tuberculosis Deformities" no mention is made of bovine infection. We are rather surprised that the question of mentally subnormal children is omitted from this book, and also that there is no article on the important subject of heart disease and rheumatic infections of childhood. On the whole we feel that the subject matter has not been very wisely selected, and that there are some statements which require alteration.

Exophthalmic Goitre. By JOHN EASON, M.D., F.R.C.P.E. Pp. 215. 19 plates and other illustrations. Edinburgh : Oliver & Boyd. 1927. Price 12s. 6d.—This should be a valuable work. It contains the author's views on the latest researches and methods of treatment in this disease, together with an extensive list of references. The work of Williamson and Pearse on the anatomical structure of the thyroid gland, and their conception of its secretory phases, are considerably referred to, though the interpretation of the context is here often difficult to follow. The author discourses at some length on the autonomic nervous system, and outlines its connections with the endocrine glands and the thyroid in particular. There is an excellent description of the clinical manifestations of the disease, including an illuminating discussion of the eye signs ; the writer disputes the presence of dilation of the pupils, a condition hitherto generally accepted. Etiological features and pathogenesis are fully discussed, an inborn susceptibility being apparently a *sine qua non*, a great majority of cases being precipitated by some mental crisis, which may often be concealed. Those afflicted with this malady will never do great things : " no outstanding man or woman appears to have suffered from the disease during the eighty years since it became generally recognised." The conception of a certain physical type of individual, peculiar to this disease, being a subject of congenital endocrinopathy and therefore prone to autonomic imbalance is certainly intriguing, and the susceptibility of certain people to small doses of thyroid extract is pointed out in this connection. The significance of blood pressure readings is fully discussed, and interesting figures are included to indicate the relationship of pulse pressures to basal metabolic rates in Graves's disease, the explanation of the increased pulse pressures being ingenious and acceptable. The difficult question of automatic imbalance with sympathetic preponderance and its differentiation from pure Graves's disease is alluded to, but without much enlightenment to the reader. From the chapter on prognosis one gathers much help in an effort to foresee the ultimate trend of a case. In a very adequate chapter on treatment concluding the work medical treatment under " ideal conditions " is affirmed to be the sheet anchor ; there is an interesting comparison of this disease and diabetes, and insulin as a factor in treatment is reviewed and its use here carefully outlined ; the fate of the blood sugar and the emaciation occurring in the course of the disease are discussed at length. The indications for administering iodine are outlined, its dangers pointed out, and the author maintains that it is

invaluable in the preparation of a case, and that "post-operative death can be prevented" by its previous judicious exhibition. Thyroidectomy is regarded as a dangerous procedure, and only to be ventured upon in certain well-defined circumstances. Although the style of the writer is somewhat heavy, some very interesting diagrammatic tables are inserted, and the general finish and print of the book is excellent.

The Heart and its Diseases. By C. W. CHAPMAN, M.D., M.R.C.P. Pp. xii., 216. Illustrated. Edinburgh: E. & S. Livingstone. 1927. Price 8s. 6d.—This is a book which contains a great deal of subject-matter in small compass. It is clearly set out, well printed and is a very readable book. It is perhaps too condensed to be of use to students, but should be exceptionally valuable to general practitioners who are too busy to read long text-books on the subject. The chapter on Rheumatism and Heart Disease and that of Heart Disease in Children contain a very good summary of the recent teaching, and that on treatment, though very short, outlines very clearly the methods of treatment, though more emphasis might have been laid on the necessity of continuing the administration of digitalis in auricular fibrillation after the rate has been slowed by this drug, a point which is still not understood by many practitioners. It is certainly a book which will fulfil a useful purpose.

Chronic Intestinal Stasis. By A. C. JORDAN, C.B.E., M.D., M.R.C.P. 2nd Edition. Pp. xv., 230. Oxford University Press. 1926. Price 21s.—Dr. A. C. Jordan's second edition of his book on chronic intestinal stasis is a valued addition to our knowledge of this branch of Radiology. He has had a unique experience of intestinal radiology, and has done an immense amount of work along these lines, and one is very glad to have his opinions and experience in print. The present book brings the subject well up to date, and should be in the library of all interested in this subject.

Cystoscopy. By J. B. MACALPINE, F.R.C.S. Pp. xvi., 284, 181 illustrations, 12 coloured plates. Bristol: John Wright & Sons Ltd. 1927. Price 25s. net.—This should prove a valuable book to those who propose to take up the study of cystoscopy seriously. It is obviously compiled by one whose experience is extensive and whose observation is accurate; but while not being exhaustive in its treatment of the subject, it is eminently suitable for those about to embark on genito-urinary work.

Treatment of Venereal Disease in General Practice. By E. T. BURKE, D.S.O., M.B., Ch.B. Pp. xiv., 162., 8 illustrations. London: Faber & Gwyer. 1927. Price 5s.—This little book, containing only 158 pages, certainly performs the object of its creation, *i.e.* a brief, clear description of a scheme for the routine treatment of venereal diseases such as can be carried out by the general practitioner. It is delightfully written, and should be most useful to all practitioners; even those who do not wish to treat venereal diseases would find it helpful in advising their patients as to the amount and length of treatment they should undergo to be cured. The book is divided into two parts—the treatment of syphilis, and the treatment of gonorrhœa, the final chapter of each being "obiter dicta" which should be committed to memory by all practitioners, and students.

A Handbook of Diseases of the Stomach. By S. WARD, M.D., M.R.C.P. Pp. x., 387., 32 illustrations. Oxford University Press. 1927. Price 16s. net.—This work is worthy of close study: Dr. Ward bases his views on practical experience, and has interesting views on the physiology of gastric sensation. He goes far to dispel the illusions which may exist with regard to the infallibility of any one method of investigation of gastric disorder; it is refreshing to come upon an author who bases his observations on sound common sense. The conclusions, false and otherwise, that may be drawn from the various means at our disposal for the diagnosis of gastric disease are thoroughly criticised, and their proper value assessed; the several fashions of treatment are dealt with in the same way, perhaps somewhat severely, but, at any rate, these procedures are narrowed down to those few which the author has found by experience to be of practical value and not based on the extravagant hypotheses of theoretical enthusiasts. As an example, whilst admitting that an abdominal belt may comfort the gastroptotic, its actual influence in raising the position of the stomach is shown by comparative radiographic pictures to be practically nil. In the matter of diet the effects of the various methods of cooking are particularly well dwelt upon, and it is a relief to hear that one is not lost in respect of alimentary salvation, or becoming bankrupt in the vitamines, by not eating wholemeal bread. Bismuth is assailed time and again, for whilst its help in the relief of symptoms is acknowledged, it is accused of doing more ultimate harm than good, except in a few well-defined conditions. Stomach rest should be the

main principle of treatment for the majority of the various dyspepsias. This, with gastric lavage and duodenal feeding, is urged to promote the healing of gastric ulcer: surgical inteference in this condition is strongly deprecated. In regard to malignant disease of the stomach, however, "whenever there is any reasonable suspicion that cancer is present, and it cannot be definitely excluded, exploratory laparotomy should be advised at the earliest possible moment." The author regards X-ray treatment as a dangerous procedure and a useless remedy for this condition; radium also he considers an impracticable method to employ. On the other hand, he claims markedly beneficial results from large intravenous doses of colloidal selenium. This book is wholesome reading, and the author is to be congratulated on his courageous handling of the present day situation in regard to gastric disease.

Venereal Disease: Its Prevention, Symptoms and Treatment. 3rd Edition. By H. W. BAYLY, M.C. Pp. xvi., 242., 74 illustrations and 3 plates. London: Faber & Gwyer. 1927. Price 10s. 6d. net.—A small handbook suitable for the general practitioner or student. It is very well arranged, the type excellent and illustrations good. It brings to the reader a sharp and clear view of modern treatment, and indicates in a most thorough manner those points which are so apt to be overlooked in the routine investigation adopted by so many busy practitioners. The chapter on prophylaxis is excellent. The inexpensive nature of the book should commend it to a large public.

The Life and Work of Sir Patrick Manson. By P. H. MANSON-BAHR, D.S.O., M.D., F.R.C.P., and A. ALCOCK, C.I.E., LL.D. Aberd., F.R.S., I.M.S. (retired). Pp. x., 273. 12 plates. London: Cassell & Co. Ltd. 1927. Price 16s.—This book is an extremely interesting and inspiring biography, giving a full insight into the life and work of that great man, "The Father of Tropical Medicine," as he has been so appropriately named. For twenty-three years he lived in China, on the island of Formosa, on the mainland, and at Arnoy and in the British Settlement of Hong Kong respectively. It would be difficult to find a less favourable environment for research work, cut off as he was from contact with the scientific world and busy with the routine work of a large native hospital, Port health officer and an extensive private practice; but he found time, despite these difficulties, to carry out his epoch-making

discoveries in filarial disease. During the latter part of his life spent in London, Manson's mosquito-malaria-theory was definitely established by Sir Ronald Ross in India. The details of this are strikingly brought out with the help of numerous extracts from letters, which show the fine, generous and unselfish character of Manson in offering Ross the results of his knowledge and experience, the utmost encouragement that he gave him, and the firm faith he had in the ultimate result. Manson's arresting personality, his patience, faculty of judgment, the result of keen observations, and his skill in divining the life history of parasites are all well brought out by the authors. The book is not only interesting and inspiring as a biography, but is instructive, especially in the history of malaria and filariasis, which is more fully dealt with than in most text-books on tropical diseases.

Therapeutic Malaria. By G. DE M. RUDOLF, M.R.C.S., L.R.C.P., D.P.H., D.P.M. Pp. xi., 223, 55 illustrations, 2 coloured plates. London: Humphrey Milford. 1927. Price 12s. 6d. net.—The theory of treating one disease by the induction of an intercurrent disease is a fascinating subject, and as the author points out, dates from ancient times. The improvement and even the dramatic recovery of patients suffering from the acute psychoses following high fever from accidental intercurrent infection by the pneumococcus, streptococcus, etc., is a frequent experience. Whether this change is due to leucocytosis, high temperature, metabolic changes, or the formation of antibodies, or any of these combined, remains unproven; and Dr. Rudolf discusses each theory in turn. The theory of leucocytosis has been made practical use of in this direction by the injection of substances both organic and inorganic to produce this effect. Though experiments of this nature have been tried on all forms of mental disorder, general paralysis has been for several years the most favoured. While the occurrence of remissions in general paralysis without any treatment or with other treatment than induced malaria is frequent, the author gives details of the very strong evidence both from his own experience and that of other workers that remissions occur far more frequently following malaria, and, moreover, can confidently be expected in a high per centage of cases. There are few mental hospitals where this treatment is not now being carried out. The results amply justify it, particularly in a disease which up to the present time has been considered fatal. Dr. Rudolf divides his book into two parts—

historical and practical. The practical part is well arranged, and deals clearly and thoroughly with the technique, the parasite and inoculation, the blood changes and the temperature chart, and points out the dangers to be guarded against. The volume forms an interesting study both for the student and as a guide to those carrying out the treatment. The temperature charts are clear and easy to follow, and there are two admirably coloured plates dealing with the blood. The numerous references at the end are listed in alphabetical order, and are not crowded into small print as is so often the case.

Urinary Surgery. By W. K. IRWIN, M.D., F.R.C.S.E. 2nd edition. Pp. viii., 271. London: Ballière, Tindall & Cox. 1927. Price 10s. 6d.—This book, dealing with urological surgery from the clinical standpoint of the general practitioner, appears to be concise and accurate. While by no means exhaustive in its treatment of the subject, it should act as a useful guide to the practitioner in judging his ability to deal with any condition or the advisability of handing on the patient to those more versed in the particular subject. The methods of examination of the patient are dealt with adequately, and the treatment also in the less complicated cases. The chief symptoms have been described in relation to their cause and treatment, and this from the general practitioner's point of view has a definite advantage over a regional arrangement of the subject. It should be found of value to those embarking on general practice.

Editorial Note.

Richard Bright, 1789–1858.

On July 8th a famous Bristolian was commemorated at Guy's Hospital and at the Royal College of Physicians. Richard Bright, whose name is perpetuated in "Bright's Disease," was born in Bristol in 1789. His father, Richard Bright, was an influential banker and prominent citizen of Bristol, who resided at Ham Green House. His third son, Richard, was educated at Dr. Estlin's School, and subsequently at Edinburgh University and Guy's Hospital. He took the degree of M.D. at Edinburgh in 1813, and in 1820 was appointed Assistant Physician at Guy's, becoming in due course Physician. But ill-health caused his retirement from the Hospital in 1843 at the early age of 54. His remaining years were devoted to consulting practice, to travel and to his many artistic interests. In spite of ill-health his practice, which had been slow in coming, grew to be perhaps the largest in London. He died after a short final illness on December 14th, 1858.

The occasion of the commemorative celebrations in London was the centenary of the publication of the first volume of Bright's *Reports of Medical Cases Selected with a View of Illustrating the Symptoms and Cure of Diseases by a Reference to Morbid Anatomy.* It contains the announcement of the discovery of

"Bright's Disease." The completeness of Bright's account of those forms of renal disease associated with his name will be realised from the fact that he described the uræmic symptoms, cerebral hemorrhage, loss of sight, the hard pulse, œdema, pleural, pericardial and peritoneal effusions, bronchitis, cardiac hypertrophy and the enteritis which may attend the disease. But even if he had not discovered the disease which bears his name he would have been, as the *British Medical Journal* observes, one of the greatest of our physicians. His powers of observation were marvellous —none of his observations have been shown to be incorrect. He could write well; as Sir William Hale-White said in the account of Bright's life he contributed to the *Guy's Hospital Reports* in 1921: "Many modern text-books would be vastly improved if some of their pages were deleted to make room for Bright's descriptions." He was an artist too—no medical work has more beautiful pictures than are to be found in the *Reports of Medical Cases.*

In the words of Professor Thayer's address at Guy's Hospital on July 8th: "Happy in his birth and in the surroundings and conditions of his early life, cultivated by travel and society, an artist, a linguist, a man of scholarly tastes, Bright made full use of his opportunities." Bristol may claim some small share in furnishing at least the "opportunities" of his birth and surroundings of his early life, and our city hospital at Ham Green may gather some reflected lustre from having been the home of his childhood.

Meetings of Societies.

Bristol Medico-Chirurgical Society.

April 13th, 1927.

Dr. A. L. Flemming, President, in the Chair.

Dr. R. S. S. Statham read a paper on **"Dysmenorrhœa,"** reported on page 187.

The President asked whether Dr. Statham found that the incidence of dysmenorrhœa reflected the recent diminution in chlorosis.

Dr. R. C. Leonard related his factory experiences. He was constantly being called to the Ambulance Room to deal with severe attacks. He found acetanilid gave great relief; benzyl benzoate he had also used. What was the maximum dose of the latter?

Dr. R. Burges asked whether the sufferers from severe spasmodic dysmenorrhœa were likely to become pregnant, and if so, did the pregnancy lead to relief.

Dr. R. G. Gordon discussed psycho-therapeutic methods. He considered that psycho-analysis was of very little value in these cases, and hypnosis of none. On the contrary, he believed treatment along these lines was harmful and even dangerous.

Dr. R. S. Carey asked what dose of thyroid gland the lecturer considered advisable. He had himself been giving three grains a day for spasmodic dysmenorrhœa.

Colonel A. E. J. Lister said that there was a definite connection between the state of the genital glands and the lens of the eye. Was the "false cataract" of women, he asked, due to some toxin from the genital tract? It was most frequent in the sufferers from genital trouble. Why did a

woman's "eyes trouble her" during the menstrual period? He suggested that during this phase a toxin was produced and poured into the circulation.

DR. G. T. MYLES suggested that physical exercise played a large part in the elimination of dysmenorrhœa from schools.

MR. J. LACY FIRTH asked whether Dr. Statham found many patients developed dysmenorrhœa of the congestive type after appendix operations. He considered the sequence rare. How many laparotomies were nugatory?

MR. W. A. JACKMAN considered that the abolition of corsets had much to do with the recent improvement in dysmenorrhœa.

DR. J. H. C. EGLINTON stated that he had been employing heliotherapy in the treatment of this condition with encouraging results.

DR. STATHAM in reply said that the recent improvement in living conditions generally for women, including clothes, food and exercise, had much to do with the diminution of dysmenorrhœa as well as chlorosis. Spasmodic dysmenorrhœa lessened the chances of pregnancy, but usually disappeared after the latter occurred. He believed that in cases of *cataractus cœruleus*, the cause of which was unknown, the calcium metabolism was deranged. It was however certain that a toxin was responsible for congestive dysmenorrhœa. For the latter condition, unless there was a demonstrable and palpable lesion, he tried to avoid operation.

Benzyl benzoate was uncertain in its action; he employed ♏ xx of 20 per cent. solution *quartis horis*. As to thyroid, he increased the dose gradually until toxic symptoms appeared. Morphin and heroin should at all costs be avoided in dysmenorrhœa; their use in this condition had often led to addiction; aspirin was safer, as the consequence of addiction were not serious.

The Medical Library of the University of Bristol,

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the list in May, 1927.

September, 1927.

American Association of Genito-urinary Surgeons (1)	1 volume.
American Pediatric Society (2)	1 ,,
Carnegie Institution (3)	1 ,,
Dental Board of the United Kingdom (4) ..	1 ,,
Dr. L. M. Griffiths (bequest) (5)	1 ,,
Professor E. W. Hey Groves (6)	2 ,,
Johns Hopkins Press (7)	1 ,,
London School of Hygiene and Tropical Medicine (8)	1 ,,
Michell Clarke Memorial Fund (9)	29 ,,
Dr. G. Parker (10)	1 ,,
Rockefeller Foundation (11)	1 ,,
Dr. J. E. Shaw (12)	2 ,,
Dr. W. A. Smith (13)	4 ,,
Wiglesworth Bequest (14)	8 ,,

Unbound periodicals have also been received from Professor E. W. Hey Groves.

THE ONE HUNDRED AND TWENTY-FIRST LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

Baetjer, F. H., and Waters, C. A. *Injuries and Diseases of the Bones and Joints* .. .. (9) 1921

Bailey, P., and Cushing, H. *Tumours of the Glioma Group* .. .. .. (9) 1926

Ballenger, W. L. .. *Diseases of the Nose, Throat and Ear* 5th Ed. (9) 1925

Barjon, F. .. .. .. *Radio-diagnosis of Pleuro-pulmonary Affections* (9) 1918

Bayly, H. W. .. .. *Venereal Disease* .. .. 3rd Ed. 1927
Belfrage, S. H. .. .. *What's Best to Eat?*.. 1926
Benedict, F. G., and Ritzman, E. G. *The Metabolism of the Fasting Steer* (3) 1927
Bertwistle, A. P., and Shenton, E. W. H. *Descriptive Atlas of Visceral Radiograms* .. .. (9) 1926
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Burke, E. T. .. .. *Treatment of Venereal Disease* 1927
Buxton, P. A., and Hopkins, G. H. E. *Researches in Polynesia and Melanesia. Entomology* .. .. (8) 1927
Cabot, R. C... .. .. *Differential Diagnosis* .. Vol. II., 3rd Ed. (9) 1924
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Cameron, S. J. .. .. *A Manual of Gynæcology* .. .. .. 3rd Ed. 1925
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Cawadias, A. P. .. .. *Diseases of the Intestines* .. .. (9) 1927
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Cole, R. H. .. .. *Mental Diseases* .. .. 3rd Ed. (9) 1924
Coriat, I. H. .. .. *The Meaning of Dreams*.. .. .. (12) 1915
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Guidott, T. .. .. .. *De Thermis Britannicis* 1691
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Keir, P. .. .. .. *Medicinal Waters of Bristol* .. .. (13) 1739
Lewis, W. B. .. .. *The Human Brain* .. .. (14) 1882
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Lister Centenary Exhibition at the Wellcome Museum 1927
Lister and the Lister Ward at the Glasgow Royal Infirmary 1927

Lockyer, C. .. .. *Fibroids and Allied Tumours* .. .. .. (9) 1918
Low, R. C. .. .. .. *Anaphylaxis and Sensitization* .. .. .. (9) 1924
Lucas, C. .. .. .. *Bath and Bristol Waters* .. .. (13) [1764]
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Semon, R. .. .. .. *Mnemic Psychology* .. .. (9) 1923
Short, T. .. .. .. *History of the Mineral Waters of Derby, Lincs. and Yorks.* 1734
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Waring, H. J. .. .. *Manual of Operative Surgery* .. 6th Ed. (6) 1927
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Asylums on the Continent. Report of Lancs. Asylums Board .. .. (14) 1900
British Journal of Surgery. Vol. 15. No. 57 1927
Guy's Hospital Reports. Vol. 77. No. 2 1927
Johns Hopkins Hospital Reports. Vol. I. .. .. (7) 1896
Journal of Mental Science. Vols. 61–63 .. .. (14) 1915–1917

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Medical Society's Transactions. Vol. 49.. 1926
Medicina Fennica, I and II. 1926–1927
Methods and Problems of Medical Education. 7th Series .. .. .. (11) 1927
Progressive Medicine. Vol. 2, 1927 1927
St. Bartholomew's Hospital Reports. Vol. 60 1927
Surgical Clinics of North America. Vols. I. and II. (12 vols.) .. (9) 1921–1922
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Transactions of American Pediatric Society. Vols. 37, 38 .. (2) 1926–1927
Transactions of International Medical Congress. 4 Vols. .. .. .. (14) 1881
Virchows Archiv. Vols. 217–225, 227 .. .. (9) 1914–1920

Local Medical Notes.

EXAMINATION RESULTS.

University of Bristol.—Students of the University have recently passed the following examinations:—

M.B., Ch.B.—*First Examination. Pass:* G. T. Bevir, W. R. Cambridge, C. J. N. Davis, H. F. M. Finzel, F. E. Fletcher, J. R. Gibbs, H. James, C. N. Royal, Frances Norma Salisbury.

M.B., CH.B. (*Part I.*).—*Second Examination. Pass:* D. P. Dewe, R. H. Moore. *In Organic Chemistry* (*Completing Examination*): J. L. S. Coulter, W. A. F. Taylor. *In Elementary Anatomy* (*Completing Examination*): L. C. Holland, Elizabeth S. G. Owen. *In Elementary Anatomy only:* C. J. N. Davis, C. N. Royal.

F.R.C.S.—*Primary Examination. Pass:* H. E. Harris, M.R.C.S., L.R.C.P., G. F. Langley, S. C. Wake.

M.R.C.S., L.R.C.P.—J. T. Chesterman, H. L. Fuller, J. C. Gent.

L.D.S., R.C.S.—A. F. D. Shapland.

L.S.A.—*Surgery* (*Completing Course for the Diploma*): S. K. Rigg. *Materia Medica and Pharmacy:* T. A. Barnabas. *Physiology:* J. S. Adamson, F. W. A. Fosbery.